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ABSTRACT

This bibliography is intended to provide lists of useful references, annotated where possible, in areas of concern to institutional researchers and planners. The bibliography covers approximately 400 publications, most published in the 1980s and early 90s. It is organized into the following 17 major topics: accreditation; assessment; budget and finance; college student characteristics; curriculum and instruction; facilities, space utilization, and scheduling; human resources; information technology; intercollegiate athletics; interinstitutional comparisons and national data bases; planning; policy analysis; predictions of academic performance; retention and enrollment management; statistics; theory and applications of institutional research; and total quality management. (GLR)

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FOR INSTITUTIONAL RESEARCH

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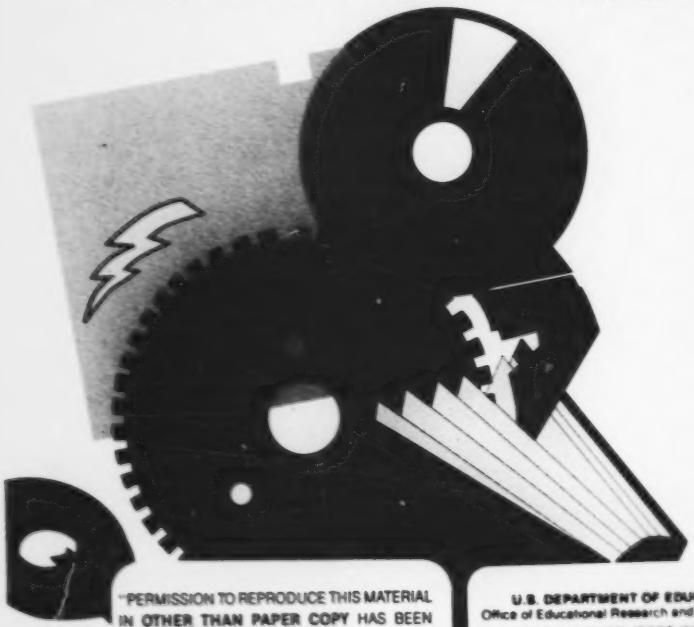

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REFERENCE SOURCES: AN ANNOTATED BIBLIOGRAPHY FOR INSTITUTIONAL RESEARCH

edited by
William R. Fendley, Jr.
Linda T. Seeloff

Association for Institutional Research
Resources for Institutional Research, Number Eight

The Association for Institutional Research
314 Stone Building
Florida State University
Tallahassee, Florida 32306

for Management Research, Policy Analysis, and Planning

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PREFACE

This bibliography has been compiled as a reference source to assist members of the Association for Institutional Research in carrying out their diverse professional responsibilities. Its purpose is to provide a list of useful references, annotated where possible, for areas of concern to institutional researchers and planners. Since the field of institutional research has grown substantially in the past several years as has the literature related to it, staying abreast of developments can be challenging and time consuming. This bibliography is intended as a tool for meeting the challenges of obtaining useful, current information within given time constraints.

The editors have organized this reference tool into seventeen major topics, some with subtopics, representing areas of concern to institutional researchers and planners. In order to identify the best and most relevant references for inclusion, topic editors were recruited to carry out the task. The topic editors were selected for their knowledge, expertise, and contributions to the literature. Thus, the role of the topic editors was to review, select, and annotate the best and most relevant references that might be of interest and use to our professional colleagues. We thank all the topic editors for their invaluable efforts. Without them this bibliography would not have been possible.

The last compilation of this bibliography, *Bibliography of Reference Sources,* was carried out in similar fashion by members of the Association for Institutional Research in 1984. Thus, the references contained herein, for the most part, date from that time. Occasionally, however, references not included in the 1984 bibliography but were published earlier have been judged relevant to the scope of this update and included. In the selection of the references, the topic editors were encouraged to consider materials based on their exemplification, thoroughness of presentation, and public accessibility.

We hope that this publication serves its purpose well, and will be updated in a few years. Your comments and suggestions are welcome.

The editors wish to express their appreciation to Ms. Barbara J. Reid for her conscientious reading of the rough drafts. We thank her for her patience, perserverance, and ability to "spot" the not-so-obvious.

William R. Fendley, Jr., and Linda T. Seeloff
Charlottesville, Virginia
June, 1993

IN MEMORIAM

Bernard D. Yancey, Ph.D.

Over the last several years, the Association has been truly fortunate to have Bernard (Bernie) D. Yancey as one of its most active members. Bernie passed away this year and in the short time he had, he left a wonderful legacy. Bernie was a methodologist's methodologist. He sought ways to solve problems; he applied what he knew; he challenged the rest of us to develop better analytical approaches; and he shared knowledge with others through numerous papers, articles, and monographs. You will find some of his contributions listed in this bibliography, as well as others about institutional research. Understand, however, these are but part of the wit and wisdom he gave us. He helped shaped the methodology of the profession and showed us how to apply it with vigor and enthusiasm. He was a friend.

ACCREDITATION

Editors: Jeffrey A. Seybert and Leslie De Reus Bielen

Chambers, R.H. 1984. Enhancing campus quality through self-study. In *Determining the Effectiveness of Campus Services*. ed. R.A. Scott. New Directions for Institutional Research, no. 41. 9-22. San Francisco: Jossey-Bass.

This chapter discusses the role of the self-study in the accreditation process. A strong institutional self-study will focus on five questions: (1) Is the institution meeting its declared purpose? (2) Is the study objective? (3) Does it show an intent to improve the institution? (4) Does it help enhance the institution's distinctiveness while maintaining programmatic balance? and (5) Does it see self-renewal as ongoing in the school's life?

Council on Postsecondary Accreditation.1991. *Dissertations, general research, reports, and articles relating to accreditation, 1985-90*. Washington, D.C. Council on Postsecondary Accreditation.

Three lists are presented involving accreditation research: 1) the last or current status of twenty dissertations in progress; 2) forty completed dissertations not in the Bibliography on Postsecondary Accreditation; and 3) eight-one general research reports and articles related to accreditation.

Council on Postsecondary Accreditation. 1991. *Outcomes assessment and analysis: A reference document for accrediting bodies*. Washington, D.C. Council on Postsecondary Accreditation.

This report provides data received from postsecondary education/professional accrediting bodies regarding the extent to which outcomes and institutional or program effectiveness are reflected in each of the following: 1) accreditation standards; 2) accreditation guidelines; 3) policy statements; 4) accrediting practices (self-study, visiting teams, etc.); and 5) other relevant publications, research, etc.

Dreuth, P.J.D. 1987. Quality control in higher education. *Higher Education in Europe* 12: 23-32.

The philosophy, structure, and operation of a Dutch system for institutional self-evaluation in higher education (AMOS) are described. The system is centrally designed to assist in national resource allocation for higher education, but the feedback is intended primarily for institutions and faculties to use in increasing efficiency and effectiveness.

Elliot, N., and Zelbart, P. 1987. *Responding to section III of the Southern Association's "criteria for accreditation": A working paper*. Commerce,TX: East Texas State University. ERIC Document Reproduction Service No. ED 286430.

This paper discusses ways that East Texas State University (ETSU) established systematic and continuous program evaluations to conform to the SACS' accreditation standards for institutional effectiveness. The historical background of educational evaluation in America is traced, and archetypes for assessment of educational outcomes are considered. Section III of the SACS' Criteria for Accreditation is examined, with attention to evaluating institutional effectiveness, specifying expected educational results and how achievement of the results is determined, ten procedures to evaluate instructional programs, and institutional research.

Fincher, C., Jones, L.G., and Placek, J., eds. 1986. *Higher education in Georgia: Assessment, evaluation, and accreditation--proceedings of the 1986 conference*. Athens, GA: University of Georgia Institute of Higher Education.

Higher education assessment, evaluation, and accreditation in Georgia are addressed in these proceedings of a 1986 conference sponsored by the University of Georgia and the Southern Association of Colleges and Schools (SACS). Panel papers cover: assessing student performance and outcomes, academic standards and needs assessments for specific fields, and SACS' new accreditation criteria and implications of the criteria for institutional research and various other areas.

Howard, R.D., Nichols, J.O., and Gracie, L.W. 1987. Institutional research support of the self study. In *A primer on institutional research*. ed. J.A. Muffo and G.W. McLaughlin. 79-88. Tallahassee, FL: Association for Institutional Research.

This chapter will be of greatest benefit to institutions beginning the self-study process. The authors provide a general outline of the self-study process and discuss, in general terms, what the office of institutional research should do to establish itself as the source of data/information for the self-study committee. A variety of data sources are discussed and a list of useful references provided.

Johnson, F.C., and Birch, D. 1989. International quality standards in college. Paper presented at the annual forum of the Association for Institutional Research, Baltimore.

A study was conducted to examine the application of quality standards developed by the International Standards Organization (ISO) to colleges in England and Wales. The British Standards Institution (BSI) has applied these standards to service industries, thus

providing a framework for case studies in colleges. Six colleges in England and Wales analyzed their curriculum, management and marketing and then prepared three-year development plans consistent with the international standards. The following conclusions were reached about the application of quality standards to colleges: (1) quality standards are most appropriate to those learning situations where "fitness for purpose" is the goal, including vocational and professional study; and (2) it is critical to measure the process in terms of the purpose of the instruction, for which a computer system using competency-based objectives is required.

Lincoln, Y.S. 1990. Program review, accreditation processes, and outcomes assessment: Pressures on institutions of higher education. *Evaluation Practice*. 11. 13-23.

This article reviews trends over the past twenty-five years calling for accreditation, program evaluation, and outcomes assessment for higher education institutions. A cooperative market model of institutional research and self-study is outlined, which involves cooperation among institutions, accrediting bodies, state departments of education, and state legislatures.

McLachlan, J., and Wood, V. 1989 (August). External to internal validation: A Scottish experience. Paper presented at the annual forum of the European Association for Institutional Research, Trier, West Germany.

The development of Napier College of Commerce and Technology in Scotland (a degree-granting institution, originally under the auspices of the Council for National Academic Awards, or CNAA) is traced. Through delegated authority and the attainment of fully accredited status the college was given full responsibility for the validation and review of its CNAA-taught courses and a change of name to Napier Polytechnic of Edinburgh.

North Central Association of Colleges and Schools. 1991. *Assessment workbook*. Chicago.

This volume was compiled to serve as a resource book for a series of workshops entitled "Assessing Student Academic Achievement in the Context of the Criteria for Accreditation" which were presented during spring, 1991. Included in the volume are sections dealing with assessment in the context of accreditation criteria, developing an assessment program, assessing student academic achievement, and others.

North Central Association of College and Schools. 1990. Sharpening the focus on assessment: The regionals and the NCA states. *NCA Quarterly* 65: 369-434.

This is an entire issue of the NCA Quarterly which focuses on the relationship of assessment to accreditation in most of the regional accrediting commissions. Executive directors of the regional accrediting commissions were invited to submit a description of their commission's approach to assessment. Reports were received from the Middle States, New England, North Central, Southern, and Western commissions and are included in this volume.

Reichard, D.J., and Marchese, T.J. 1987 (May). Assessment, accreditation, and institutional effectiveness: Implications for our profession. Paper presented at the annual forum of the Association for Institutional Research, Kansas City.

This paper first provides detailed definitions of assessment, accreditation, and institutional effectiveness. The discussion then moves to the emergence of assessment as an issue, the assumptions which underlie assessment, the history of institutional research as it is related to assessment and accreditation, and recommendations for institutional researchers regarding assessment and accreditation.

Rogers, B.H., and Gentemann, K.M. 1989. The value of institutional research in the assessment of institutional effectiveness. *Research in Higher Education* 30: 345-355.

Assessment of institutional effectiveness is required by many accrediting agencies and mandated by some state legislatures. This article reports the results of a survey of institutions facing reaccreditation by the Southern Association of Colleges and Schools between 1987 and 1992. The results are seen as raising questions about the role of institutional research in the accreditation process and in evaluation of institutional effectiveness.

Smith, G., and Prather, J.E. 1986 (October). SACS' effectiveness criterion: A self-analysis based upon the "must" statements. Paper presented at the annual conference of the Southern Association for Institutional Research, Pipestem, WV.

This paper considers the possible impact of the Southern Association of Colleges and Schools' (SACS) criterion, Section III, Institutional Effectiveness. The way that one state university approached the SACS' expectation on institutional effectiveness is examined. Attention is directed to: an effectiveness process model developed by a self-study committee; a matrix of effectiveness-related "must" statements underlying the criteria; and the involvement of an office of institutional research. Included is a matrix that provides an internal scorecard for self-analysis of the entire institution.

Southern Association of Colleges and Schools. 1992. *Criteria for accreditation: Commission on colleges*. Atlanta.

The accreditation criteria manual produced by the Southern Association of Colleges and Schools (SACS) contains a wealth of information relating institutional research to accreditation. It details the "Must" statements which institutions are required to meet, the "Should" statements which are recommended but not required, and the expectations of the visiting accrediting team. It points out in clear terms what the expectations are for reaccreditation. (A complement to the Criteria manual for the institutional researcher is the Resource Manual. This manual provides one approach to dealing with the process of evaluating the effectiveness of an institution.

Thrash, P.A. 1987. A report on the role of outcomes evaluation in the accreditation process. *NCA Quarterly* 61: 481-490.

This article reports the results of two surveys of regional institutional accrediting agencies on the approach of accrediting commissions to the evaluation of educational outcomes. The results of a 1984 survey indicated that all of the regional accrediting commissions made some reference to the concept of evaluating educational outcomes. By 1986 most of the references of the institutional accrediting agencies to outcomes were much more explicit and emphasized the importance of educational outcomes as well as their appropriate relationship to the other aspects of institutional evaluation. The author discusses the results of the surveys and provides a series of conclusions.

Leslie De Reus Bielen is Management Analysis Coordinator at Florida Atlantic University in Boca Raton, Florida.

Jeffrey A. Seybert is Director of Research, Evaluation and Instructional Development at Johnson County Community College in Overland Park, Kansas.

ASSESSMENT

Editors: Karen M. Gentemann and Brenda Hyde Rogers

Adelman, C., ed. 1988. *Performance and judgment: Essays on principles and practice in the assessment of college student learning*. Washington, DC: Office of Research, U.S. Department of Education.

The essays in this volume cover specific and practical topics with sufficient thoroughness and technical information to assist practitioners developing assessment processes. Anyone seeking assistance in assessing general education, the major, student values, motivation, mathematics, basic language skills, writing, life competencies, and generic outcomes should turn to this work. The annotated bibliography on assessing student educational outcomes, prepared by Gary Pike, is a good resource.

Adelman, C. 1989. *Signs and traces: Model indicators of college student learning in the disciplines*. Washington, DC: Office of Research, U.S. Department of Education.

An early resource book in the assessment field, this volume is still useful as a resource for specific field assessments. Each field is covered by a different author. The volume includes assessment models for computer science, mechanical engineering, biology, physics, and chemistry.

Alexander, J.M., and Stark, J.S. 1986. *Focusing on student academic outcomes: A working paper*. Ann Arbor: National Center for Research To Improve Postsecondary Teaching and Learning, University of Michigan.

A good primer for someone entering the field of assessment, this paper is useful for its review of a wide variety of nationally available tests and for its graphic depiction of different approaches to assessment.

Astin, A.W. 1991. *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education*. New York: Macmillan.

A lucid critique of assessment practices in higher education with a description of ways to strengthen assessment, this book focuses on the assessment of changes in students and examines the relationship of the college environment to student outcomes after controlling for entry characteristics. The appendix provides an excellent summary of statistical analysis of longitudinal data, using the model proposed in the book.

Banta, T.W., ed. 1988. *Implementing outcomes assessment: Promise and perils.* New Directions for Institutional Research, no. 59. San Francisco: Jossey-Bass.

This broad-ranging volume covers organizational issues, cognitive and non-cognitive assessment measures, psychometric questions, costs of assessment, and the details of statewide performance funding. Any single article is a candidate for distribution to faculty committees. There are particularly good discussions on the sources of information about learning and about implementing an assessment program.

Bray, D., and Belcher, M.J., eds. 1987. *Issues in student assessment.* New Directions for Community Colleges, no. 59. San Francisco: Jossey-Bass.

The chapters cover three major areas: accountability issues; assessment practices, including the uses and misuses of testing; and the impact of assessment. Although the volume specifically addresses assessment within the community colleges, some of the issues are common to the general assessment literature: value-added assessment, assessment of writing skills, and placement testing. Some important topics not covered in other volumes include testing the disabled student and a customized assessment and planning model.

Council of Presidents and State Board for Community College Education. 1989. The validity and usefulness of three national standardized tests for measuring the communication, computation, and critical thinking skills of Washington state college sophomores: Technical report. September. Bellingham, WA: Western Washington University.

This report of a research project to test the appropriateness of three standardized tests--ACT COMP, ETS Academic Profile, and ACT CAAP--for statewide assessment in Washington presents an extremely useful discussion of the issues associated with assessing general education using standardized tests. The goal of the project was to determine whether test results could be used to improve the curriculum and to provide evidence of accountability to citizens of the state. A detailed description of the three tests is provided.

Cross, K.P., and Angelo, T.A. 1988. *Classroom assessment techniques.* Ann Arbor: National Center for Research To Improve Secondary Teaching and Learning, University of Michigan.

This excellent reference for ideas on in-class formative assessment strategies is particularly useful for faculty who are looking for alternative forms of feedback on student learning and who prefer to use qualitative measures. The handbook is well laid out and filled with examples.

Erwin, D.T. 1991. *Assessing student learning and development: A guide to the principles, goals, and methods of determining college outcomes*. San Francisco: Jossey-Bass.

Though labeled a "primer," this book describes the assessment process in detail with the technical coverage necessary for persons developing assessment programs on their campuses. Although the material is not new, it brings together the following information into one volume: purpose of assessment, building an assessment program, establishing objectives, selecting assessment methods, designing new methods, collecting and maintaining information, analyzing information, reporting and using information, and assessment for improving quality.

Ewell, P.W., ed. 1985. *Assessing educational outcomes*. New Directions for Institutional Research, no. 47. San Francisco: Jossey-Bass.

This is an excellent resource for both new and experienced assessment leaders. Case studies are presented of four pioneer institutions in the assessment movement. A good overview is given on how to conduct follow-up studies of former students and how to present data to increase its usefulness. The experience of the seven institutions who participated in the NCHEMS/Kellogg project is used to illustrate good practice in improving the use of outcomes information in decision-making.

Ewell, P.T. 1991. *Benefits and costs of assessment in higher education: A framework for choicemaking*. Boulder, CO: National Center for Higher Education Management Systems.

This book summarizes and analyzes the benefits, costs, and externalities (social costs) for different assessment strategies. Included is a discussion on the various ways to calculate costs, who pays for assessment, and how to think of benefits.

Ewell, P. 1987. Outcomes, assessment, and academic improvement: In search of usable knowledge. In *Higher education: Handbook of theory and research*, J. Smart, ed., vol. iv. New York: Agathon.

This article reviews the research literature on the impact of college from the policy perspective of what actually works. It also discusses the use of outcomes information.

Farmer, D.W. 1988. *Enhancing student learning: Emphasizing essential competencies in academic progress*. Wilkes-Barre, PA: King's College Press.

This book relates the experience of King's College, a small liberal arts institution, in developing a coherent liberal arts curriculum which links assessment and learning and which focuses on faculty development as a critical factor in its assessment plan. The volume is well-written and provides practical advice and strategies for developing an integrated assessment program. King's College employs a course-embedded model of assessment, although it also relies on other means of evaluating student outcomes.

Fincher, C., ed. 1989. *Assessing institutional effectiveness: Issues, methods and management*. Athens, GA: The Institute of Higher Education, The University of Georgia.

The conference proceedings give an overview of issues relevant to institutions as they respond to external demands, particularly from accrediting bodies, for evidence of institutional effectiveness. Two articles provide a fine review of methodological problems associated with assessment. A series of articles focuses on assessment as related to minority students.

Gardiner, L.F. 1989. Planning for assessment: Mission statements, goals, and objectives. Trenton, NJ: Office of Learning Assessment, New Jersey Department of Higher Education.

This unpublished, unbound document is a valuable resource for institutions just beginning to address the question: What do we assess? The process of reviewing and revising the mission statement and developing meaningful goals and measurable objectives is carefully described. In addition to the text, the appendices include a list of additional resources, an annotated bibliography, and numerous examples of mission statements, classification systems for outcomes, and institutional outcomes.

Gray, P.J., ed. 1989. *Achieving assessment goals using evaluation techniques*. New Directions for Higher Education, no. 67. San Francisco: Jossey-Bass.

This excellent volume appropriately begins with a chapter on "Learning from the Field of Evaluation." A pervasive theme is the distinction between evaluation and assessment, and the authors provide different perspectives. For those who thought assessment was a new phenomenon, it is helpful to view assessment from the perspective of evaluation.

Halpern, D.F., ed. 1987. *Student outcomes assessment: What institutions stand to gain.* New Directions for Higher Education, no. 67. San Francisco: Jossey-Bass.

This volume is a primer for those who are planning an assessment program or contemplating various approaches to assessment. It is an edited volume of the proceedings of a student outcomes assessment conference sponsored by the California State University. Four models of assessment are presented from Tennessee, Missouri, New Jersey, and Florida. A fascinating historical context for interpreting educational achievement is presented.

Jacobi, M., Astin, A., and Ayala, F., Jr. 1987. *College student outcomes assessment: A talent development perspective.* ASHE-ERIC Higher Education Report no. 7. Washington, DC: Clearinghouse on Higher Education.

This superb monograph presents one of the best perspectives on assessment which is locally-based, longitudinal in scope, and independent of any particular test or procedure. In addition to a good summary of the rationale for assessment, the authors include an insightful discussion of differing approaches to establishing goals and present a case for how assessment findings can provide a context for decision-making. They suggest strategies for utilizing assessment information that is independent of a supportive CEO. A reflective assessment guide is provided.

Light, R.J. 1990. *The Harvard assessment seminars: Explorations with students and faculty about teaching, learning, and student life.* Cambridge, MA: Harvard University Press.

This description of a project at Harvard University shows how faculty and student involvement in assessment can lead to meaningful information for improving teaching and learning. Rather than a top-down effort, this describes voluntary participation in seminars that stimulate teaching innovation, research and experimentation.

Light, R.J. 1992. *The Harvard assessment seminars second report: Explorations with student and faculty about teaching, learning, and student life.* Cambridge, MA: Harvard University Press.

A number of research projects using a variety of data sources and research methodologies are described. Major findings are useful in improving the under-graduate's academic experience.

Light, R.J., Singer, J.D., and Willett, J.B. 1990. *By design: Planning research on higher education*. Cambridge, MA: Harvard University Press.

Although a good text in educational research methods covers the same content, the strength of this volume is the application of research design to assessment in higher education. Basically experimental and quasi-experimental designs are described for assessing the effects of innovative teaching strategies, academic policies, or student development programs in colleges and universities. General topics read like any text in educational research methods: research questions, target populations and samples, selection, predictor variables, appropriate comparison groups, outcomes (specifically short-term versus long-term), measurement issues, sample size, and pilot studies.

McMillan, J.H., ed. 1988. *Assessing students' learning*. New Directions for Teaching and Learning, no. 34. San Francisco: Jossey-Bass.

A superb book for anyone involved in assessment, there is a good section on testing issues; on assessing critical thinking; and on strategies and procedures for assessing writing, experiential learning, and major programs. Examples and resources are provided. An erudite discussion about grades is presented which is especially helpful to the assessment coordinator who must respond to questions about the relationship between grades and assessment.

Nettles, M., ed. 1990. *The effect of assessment on minority student participation*. New Directions for Institutional Research, no. 65. San Francisco: Jossey-Bass.

This is an edited volume which covers minority participation in higher education from pre-collegiate preparation to access to graduate school. Most authors use a definition of assessment which focuses on testing. Two authors use a broader definition; one raises relevant research questions for an assessment program concerned with diversity. The importance of distinguishing among minority subgroups is emphasized.

Nichols, J. 1991. *A practitioner's handbook for institutional effectiveness and student outcomes assessment implementation*. New York: Agathon Press.

This book describes a process for carrying out planning and assessment activities for the purpose of improving the effectiveness of institutions of higher education. For those who want to know how to begin, how to implement, and how to sustain such a process, this is an excellent resource. Contributors to resource sections provide detailed information on a number of topics, including student cognitive, affective, and performance outcomes.

Pascarella, E.T., and Terenzini, P.T. 1991. *How college affects students: Findings and insights from twenty years of research.* San Francisco: Jossey-Bass.

Appendix includes a discussion of methodological issues. It explores in lay person's terms some of the problems--and some of the approaches--to studying student change and the effects of college on student learning and growth.

Stark, J.S., Shaw, K.M., and Lowther, M.A. 1989. *Student goals for college and courses: A missing link in assessing and improving academic achievement.* ASHE-ERIC Higher Education Report no. 6. Washington, DC: The George Washington University.

This volume is concerned with the range of goals that students have from the personal and social to those which are employment-related. This is a useful monograph for those who develop and use student surveys which try to capture and track students' goals and motivations. A very helpful appendix is also included.

Tierney, W.G., ed. 1990. *Assessing academic climates and cultures.* New Directions for Institutional Research, no. 68. San Francisco: Jossey-Bass.

This volume is not strictly a treatise on assessment as student outcomes, but rather is an attempt to examine the conceptual and methodological shift in institutional research toward qualitative, intuitive research approaches. There is a good review of student typologies and campus climate, concepts which can be used by the assessment researcher who is interested in examining organizational climate.

OTHER RESOURCES

JOURNALS

Assessment Update
Edited by Trudy W. Banta
Room 140 Administration Building
Indiana University/Purdue University
355 North Lansing Street
Indianapolis, IN 46202-2896

Jossey-Bass Inc., Publishers
350 Sansome Street
San Francisco, CA 94104-1310

Published quarterly, this is a publication to monitor practices in assessment. Other information is available from the Center.

ASHE-ERIC Higher Education Reports
ERIC Clearinghouse on Higher Education
School of Education and Human Development
The George Washington University
One Dupont Circle, Suite 630
Washington, DC 20036-1183

Journal of Higher Education
Published in affiliation with the American Association for Higher Education
Ohio State University Press
1070 Carmack Road
Columbus, OH 43210

Research in Higher Education
Journal of the Association for Institutional Research
Human Sciences Press, Inc.
233 Spring Street
New York, NY 10013-1578

The Review of Higher Education
Journal of the Association for the Study of Higher Education (ASHE)
The American University
Washington, DC 20016

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Barbara D. Wright, Director of Assessment Forum

AAHE publishes *Change* magazine, which frequently addresses important assessment topics. See, for instance, "Faculty Voices of Assessment" in the July/August, 1988 issue. AAHE sponsors an annual national forum on assessment. The office in Washington also keeps "fugitive documents" related to assessment. "Principles of Good Practice for Assessing Student Learning" is available upon request from AAHE.

American Council on Education
One Dupont Circle, Suite 801
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ACE periodically produces reports on the state of assessment. In particular, Higher Education Panel Report No. 79, entitled, Assessing Assessment, 1991, is an informative document.

National Association of State Universities and Land Grant Colleges
One Dupont Circle, Suite 710
Washington, DC 20036
Tel. (202) 778-0818

NASULGC has produced a statement of good practices in assessment.

Some professional associations such as the American Assembly of Collegiate Schools of Business (605 Old Ballas Road, St. Louis, MO 63141-7077) have developed assessment instruments or engaged in assessment projects.

RESOURCES FOR PURCHASING TESTS AND QUESTIONNAIRES

American College Testing (ACT) Program
P. O. Box 168
Iowa City, IA 52243
Tel. (319) 337-1051
Dr. David A. Lutz, Director
College Level Assessment and Survey Services

ACT publishes the College Outcomes Measures Program (COMP), Collegiate Assessment of Academic Proficiency (CAAP), a set of surveys through the ACT Evaluation/Survey service, technical manuals supporting the instruments, and research papers.

Center for the Study of Evaluation
UCLA Graduate School of Education
Moore Hall 145
405 Hilgard Avenue
Los Angeles, CA 90024-1521
Tel. (213) 825-8331
Dr. Robert Pace

The College Student Experiences Questionnaire and the Community College Student Experiences Questionnaire may be ordered, and research on the instrument are available.

Educational Testing Service (ETS)
Princeton, NJ 08541-0001
Tel. (609) 734-1162
Dr. Nancy Beck
Higher Education Outcomes Assessment

ETS publishes a number of instruments to assess general education, achievement in major fields, institutional goals, and attitudinal surveys.

National Center for Higher Education Management Systems (NCHEMS)
P. O. Drawer P
Boulder, CO 80302
Tel. (303) 497-0390

NCHEMS publishes a set of questionnaires and numerous books and reports on assessment. Workshops are also presented by NCHEMS.

Riverside Publishing Company
8420 Bryn Mawr Avenue
Chicago, IL 60631-3476

Riverside publishes the College BASE, a criterion-referenced test of general education, and its technical manual.

OTHER

Education Commission of the States
1860 Lincoln Street
Denver, CO 80295

ECS has produced several working papers on state-based assessment issues.

ERIC Clearinghouse on Higher Education
The George Washington University
One Dupont Circle, Suite 630
Washington, DC 20036-1183

The Clearinghouse annually produces a select bibliography on student outcomes from the ERIC database.

Council for the Advancement of Standards (CAS)
Office of Student Affairs
2108 Mitchell Building
University of Maryland at College Park
College Park, MD 20742-5221

CAS has published standards for evaluating student services/development programs and workbooks, called guides, for use in assessing eighteen program areas.

Clearinghouse for Higher Education Assessment Instruments
The University of Tennessee-Knoxville
212 Claxton Education Building
Knoxville, TN 37996-3400
Tel. (615) 974-2350

National Center for Postsecondary Teaching, Learning, and Assessment
The Pennsylvania State University
403 South Allen Street, Suite 104
University Park, PA 16801-5202
Tel. (814) 865-5917
E-MAIL: NCTLA@PSUVM.BITNET
James L. Ratcliff, Director

Publishes miscellaneous books, monographs, and papers on the topic of assessment.

Project for Area Concentration Achievement Testing (PACAT)
Box 4568
Austin Peay State University
Clarksville, TN 37044
Tel. (615) 648-7451
Anthony Golden, Director

Funded by a FIPSE grant, PACAT surveys academic curricula by content area, collects test items written by faculty, and constructs, distributes, and scores Area Concentration Achievement Tests.

Standards for Educational and Psychological Testing. 1985. Washington, DC: American Psychological Association.

An essential reference for persons working in the area of testing, it can be ordered from APA.

South Carolina Higher Education Assessment (SCHEA) Network
Office of Assessment
210 Tillman Hall
Winthrop College
Rock Hill, SC 29733
Tel. (803) 323-2341
Reid Johnson, SCHEA Network Coordinator

Published *Annotated bibliography of higher education assessment literature and methodological options for assessing higher education objectives: A critical review.* Sponsors an annual conference and serves as a depository for assessment information.

State of New Jersey
Department of Higher Education
20 West State Street
CN 542
Trenton, NJ 08625
Tel. (609) 292-8912

Although the College Outcomes Evaluation Program is now defunct, publications such as *The assessment of student development outcomes: A review and critique of assessment instruments*, by Gary Hanson, and a number of other documents are available in the library of the New Jersey Department of Higher Education.

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BUDGET AND FINANCE

Editor: Heather J. Haberaecker
Contributors: William F. Lasher, Charles S. Lenth and George A. Pierce

Overview

Brinkman, P.T., and Allen, R.H. 1986. *Concepts of cost and cost analysis for higher education*. AIR Professional File, no. 23. Tallahassee, FL: Association for Institutional Research.

Provides an excellent overview of the concepts of cost. Leads practitioners through all the necessary questions and issues involved in conducting a cost study, including purpose, types of cost analysis, types of cost, calculations of cost and cost measurement.

Brinkman, P.T., and Allen, R.H. 1983. *Marginal costing techniques for higher education*. Boulder, CO: National Center for Higher Education Management Systems.

Given the continuing interest in using marginal costing techniques in statewide funding formula, this monograph describes the three common methods of calculating marginal costs and evaluates the utility of each approach.

Caruthers, J.K., and Orwig, M.D. 1979. *Budgeting in higher education*. ERIC/Higher Education Research Report no. 3. Washington, DC: American Association for Higher Education.

A frequently cited work which explains budgeting in non-technical terms, including historical and organizational contexts, policies, methodologies and responsibilities at different organizational levels.

Chafee, E.E. 1983. The role of rationality in university budgeting. *Research in Higher Education* 19(4): 387-406.

Counterpoint to the article above on the rationality of the budget process. Good review of various decision-making theories.

College and University Business Administration. 1992. 5th ed., ed. Deirdre McDonald Greene. Washington, DC: National Association of College and University Business Officers.

This three-volume reference document has been an authority on business, finance and administrative issues for forty years. It covers twenty-three topics, each with an extensive bibliography. With an increased emphasis on key decision processes in higher education, legal issues and opportunities provided by new information technologies, this fifth edition is decidedly geared toward the manager as leader.

Frances, C. 1990. What factors affect college tuition? A guide to the facts and issues. Washington, DC: American Association of State Colleges and Universities.

Written in response to the outcry over the rising cost of tuition, this monograph separates fact from fiction regarding the rate of increase in the 1980s and explains the reasons for the increase, including the cost pressures related to shifting student majors, technological changes, faculty compensation and mandated programs. The study encompasses both public and private institutions.

Hyatt, J.A., and Santiago, A.A. 1986. *Financial management of colleges and universities*. Washington, DC: National Association of College and University Business Officers.

An orientation and reference book designed to assist new financial managers in understanding their duties and responsibilities, particularly those that come from the academic ranks. In addition to describing the financial management process and necessary activities, the book contains a useful financial management assessment questionnaire in the appendix.

Leslie, L.L., and Anderson, R.E., eds. 1986. *ASHE reader on finance in higher education*. Needham Heights, MA: Ginn Press.

Contains twenty-four articles in two broad areas: financial (operational) issues at the campus level and financial (policy) issues usually at the state or federal levels. While many of the articles have become dated, the Reader addresses issues unique to specific types of institutions and introduces readers to some of the classic articles in the field by Howard Bowen, Cameron Fincher and others.

Leslie, L.L., ed. 1984. *Responding to new realities in funding*. New Directions for Institutional Research, no. 43. San Francisco: Jossey-Bass.

Addresses new financing strategies developed in response to declining revenues and/or students, including new funding formulae, budgeting and reallocation strategies and incentive financing strategies.

Lindblom, C.E. 1959. The science of muddling through. *Public Administration Review* (Spring): 79-88.

Widely cited as an alternative to rational decision-making in budgeting.

Taylor, B.J.R. 1986. *The calculation and presentation of management information from comparative budget analysis*. AIR Professional File, no. 24. Tallahassee, FL: Association for Institutional Research.

Provides a system of analyzing unit and marginal costs and compares ninety-five similar British institutions on expenditure patterns and priorities.

Wildavsky, A.(1984). *The politics of the budgetary process*. 4th ed. Boston: Little, Brown and Co.

The classic in the field; essential reading for general overview and knowledge of incremental budgeting, program planning budgeting systems and political rationality.

State Budgeting

Curry, D.J., and Fischer, N. 1986. Public higher education and the state: Models for financing, budgeting and accountability. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, February, San Antonio, TX. (ED 268 886).

Suggests four models of state-institutional funding relationships ranging from institutions being treated like state agencies to the entrepreneurial independent institution which receives funds based on contracted services.

Halstead, D.K. 1990. *State profiles: Financing public higher education, 1978 to 1990.* Washington, DC: Research Associates of Washington.

Provides an intensive look at higher education funding by state, normalizing many variables to create greater comparability across states while differentiating by institution type. Also provides indicators of effort and ability to fund higher education.

Jones, D. P. 1984. *Higher education budgeting at the state level: Concepts and principles.* Boulder, CO: National Center for Higher Education Management Systems.

Provides a concise set of concepts and principles about state-level budgeting and resource allocation as viewed from the state perspective. Also addresses emerging budgetary issues in the 1980s.

Layzell, D.T., and Lyddon, J.W. 1990. *Budgeting for higher education at the state level: Enigma, paradox and ritual.* ASHE-ERIC Higher Education Research Report no. 4. Washington, DC: The George Washington University, School of Education and Human Development.

Beginning with a conceptual overview and explanation of the environmental contexts of state-level budgeting, this monograph not only addresses the primary elements of the state budget process for higher education but provides a perspective on linking resources with a wide array of state objectives for higher education policy.

Institutional Level

Brown, K.W., and Gates, L.C. 1989. Financial self-assessment: A key component in strategic planning. Paper presented at the Annual Meeting of the Society for College and University Planning, July, Denver, CO.

This paper shows the application of the NACUBO financial self-assessment model at a regional state university and how the substantive results were incorporated into the institution's strategic plan. Also provides a historical perspective on financial self-assessment and critiques the strengths/weaknesses of the NACUBO model.

National Association of College and University Business Officers. 1987. *Financial self-assessment: A workbook for colleges and universities.* Washington, DC.

A step-by-step method for evaluating an institution's financial condition, complete with computer diskette. Particularly useful for the small, private institution.

Size, growth and cost of administration at the California State University. 1988. A report prepared by Price Waterhouse and MGT Consultants for the California Postsecondary Education Commission, report 88-7, February, California Postsecondary Education Commission, Sacramento, CA.

A recurring issue which is likely to receive increasing attention during the 1990s given the emphasis on reducing the administrative lattice or complexity of operations. The study compares the size, growth and cost of administration at the California State University institutions and other similar institutions.

Emerging Issues

The "three R's" of the 1990s: reorganization, reallocation and reduction are likely to be recurring themes in the budget and finance area over the next decade. Efforts directed at cost containment, including encouraging growth by substitution, reducing the administrative lattice and reversing the academic ratchet dominate much of the recent higher education literature. The following two documents provide an excellent overview of these topics.

Massy, W. 1991. Improving academic productivity the next frontier? *Capital Ideas* 6(2) (September/October). New York: Forum for College Financing, Teachers College, Columbia University.

Zemsky, R., ed. 1991. *Policy Perspectives* 3(2)(February). Pew Higher Education Research Program. Philadelphia: Institute for Research on Higher Education.

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COLLEGE STUDENT CHARACTERISTICS

Editor: Marsha V. Krotseng
Contributors: Jean J. Endo, John H. Milam, and Amaury Nora

Comprehensive Syntheses of Research on Students

Feldman, K., and Newcomb, T. 1969. *The impact of college on students*. San Francisco: Jossey-Bass.

This landmark book integrates and synthesizes research up through the late 1960s on the effect of college on student outcomes. Feldman and Newcomb use a sociological approach to examine personal and social development during the college years, as well as career and social development following college. Their methodological critique of previous research is especially helpful.

Pascarella, E., and Terenzini, P. 1991. *How college affects students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.

This comprehensive book reviews and synthesizes the results of over 2,500 studies on the impact of college on students that have been published since Feldman and Newcomb's classic examination of this topic in 1969. Pascarella and Terenzini identify affective and cognitive outcomes affected by college attendance. They use a developmental perspective to organize their findings and to clarify complex issues.

Effects of College

Astin, A. 1977. *Four critical years: Effects of college on beliefs, attitudes, and knowledge*. San Francisco: Jossey-Bass.

This book is based on data collected by UCLA's Cooperative Institutional Research Program from approximately 300 post-secondary institutions. Astin discusses the effects of college attendance on student attitudes, values, and behaviors.

Bowen, H. 1977. *Investment in learning*. San Francisco: Jossey-Bass.

This book reviews research on the value of college for individual students and for society. Bowen examines the economic and non-economic benefits of higher education in relation to the cost of acquiring a college degree and public demands for accountability. He answers social critics and makes recommendations for the future.

Pace, C.R. 1990. *The undergraduates: A report of their activities and progress in college in the 1980s*. Los Angeles: University of California, Center for the Study of Evaluation.

The study analyzed aggregated (1983-1986) College Student Experience Questionnaire (CSEQ) data from more than 25,000 students at seventy-four colleges and universities, grouped into five types of institutions: research universities, doctoral universities, comprehensive colleges and universities, general liberal arts colleges, and selective liberal arts colleges. An analysis of the seventy-four diverse colleges and universities focused on the quality of student effort/involvement during college in both academic (intellectual) and interpersonal experiences and its relationship to student-reported gains in a number of intellectual skill development areas.

Pace, C.R. 1979. *Measuring outcomes of college: Fifty years of findings and recommendations for the future*. San Francisco: Jossey-Bass.

Pace examines what is known about higher education based on fifty years of testing and questionnaires administered to students and institutions. Pace describes undergraduate achievement and outcomes of students following college attendance. In addition, a section is devoted to studies of colleges themselves and to the role of institutional research.

The Freshman Experience

Astin, A. 1991. *The American freshman: Twenty-five-year trends, 1966-1990*. Los Angeles: University of California, Graduate School of Education, Higher Education Research Institute.

Since 1966, the Cooperative Institutional Research Program (CIRP) has collected data on the characteristics of entering first-time freshmen enrolled in two- and four-year colleges. This report describes changes in students' background, experiences, attitudes and values, expectations, career aspirations, and future goals over the past twenty-five years.

Astin, A., Green, K., and Korn, W. 1987. *The American freshman: Twenty-year trends, 1966-1985*. Los Angeles: University of California, Graduate School of Education, Higher Education Research Institute.

The report numerically and substantially documents significant shifts during the period from 1967 to 1985 in areas relating to student participation in higher education, changes in enrollment rates, persistence, college aspirations, sex role attitudes, and attitudes toward education and experiences in college among entering college students. Trends in intrinsic and extrinsic values were based on the Cooperative Institutional Research Program (CIRP) database which includes over 200,000 students at more than 300 institutions.

Upcraft, M.L., Gardner, J.N., and Associates. 1989. *The freshman year experience: Helping students survive and succeed in college*. San Francisco: Jossey-Bass.

Various perspectives, from president to resident assistant, are offered in this volume on freshmen. History, demographics and student development theory are used to introduce the reader to the topic. Services and programs such as the freshman seminar are discussed in depth. The needs of different populations, such as minority students and adult learners, are highlighted.

Minority Student Experiences

Astin, A.W. 1982. *Minorities in American higher education: Recent trends, current prospects, and recommendations*. San Francisco: Jossey-Bass.

In this Commission report, Astin documents the data and offers future projections of minority student enrollment. Issues of access, educational attainment, under-representation in the disciplines, and the development of minority faculty are discussed. Problems of attrition are related to high school preparation and college environmental characteristics. Numerous recommendations are offered.

Fleming, J. 1984. *Blacks in college: A comparative study of students' success in black and in white institutions*. San Francisco: Jossey-Bass.

Fleming's study examines the undergraduate experience of African-American students at both black and white institutions. The study focused on the influence of college racial composition on the intellectual development of African-American students. A cross-sectional design compared separate cohorts of African-American freshmen and seniors at a predominantly black and a predominantly white institution, both located in the Southwest. The groups were compared on three measures of general cognitive development. The study specifically examines the crisis in social adjustment of African-American students in predominantly white institutions.

Olivas, M., ed. 1986. *Latino college students*. New York: Teachers College Press.

The book is a collection of essays on the field of Hispanics in higher education. The volume's three major parts include "The Transition from High School to College," "Hispanic Student Achievement," and "Economics and Stratification." Studies in the book provide an overview of key stages and turning points in the educational process of Hispanics that is unusually complete. The book provides insights into issues relating to Hispanics in higher education from a mixture of views from psychologists, sociologists, economists, and policy analysts. The book is most provocative in presenting divergent views on Hispanic student retention, financial aid packaging, academic achievement, test bias and fairness, access, and stratification.

National Longitudinal Study

Eagle, E., et al. 1988. High school and beyond: A descriptive summary of 1980 high school seniors six years later and a descriptive summary of 1980 high school sophomores six years later. Washington, DC: National Center of Education Statistics, U.S. Department of Education.

These two reports summarize recent major findings from the High School and Beyond longitudinal study which collected data from national samples of high school seniors and sophomores in 1980 and then conducted follow up surveys in 1982, 1984, and 1986. By 1986, over two-thirds of the students had enrolled in some form of postsecondary education. These reports contain information on students' educational and employment experiences, family formation patterns and attitudes and opinions.

Student Learning and Development

Chickering, A.W. 1969. *Education and identity*. San Francisco: Jossey-Bass.

This classic of the college student literature describes Chickering's seven vectors of student development. The vectors include: developing competence, managing emotions, developing autonomy, establishing identity, freeing interpersonal relationships, developing purpose and developing integrity. Student affairs and academic programs and interventions to foster development are discussed.

Chickering, A. and Associates. 1981. *The modern American college: Responding to the new realities of diverse students and a changing society*. San Francisco: Jossey-Bass.

This major work is based on the premise that higher education must encourage intentional developmental change throughout the life cycle. Chickering and his highly respected co-authors present research-based models of adult development and discuss the implications of these models for specific disciplines, for instruction, and for student services. Individual chapters detail special needs of women, minorities, and adult learners. The authors describe this volume as useful in obtaining information on two general levels: (1) the requirements of adult motivation, learning, and development in relation to educational practices and (2) the overall purpose of American higher education.

Cohen, A., and Brawer, F. 1989. *The American community college*, 2d ed. San Francisco: Jossey-Bass.

The book is a comprehensive attempt at identifying and addressing the various facets of community colleges that have been present from their inception. Cohen and Brawer review the social and historical background of community colleges, enrollment trends, hiring practices, instructional techniques, and academic programs of two-year institutions. A discussion of the principal functions of the community college (career, compensatory, community and collegiate education) is included as well as how those functions impinge on each other. Finally, the book addresses the directions that community colleges may be taking and their legitimacy as institutions of higher education.

Cross, K. 1981. *Adults as learners: Increasing participation and facilitating learning.* San Francisco: Jossey-Bass.

The book contrasts cognitive and affective processes affecting both traditional and non-traditional students. Differences between first-time entering freshmen and older returning students are examined. The book further addresses and/or stresses the need on the part of higher education institutions to build upon the experience of returning students and to make the academic environment more practical oriented. Suggestions are made regarding administrative policy and instructional designs more specific to the adult learner.

Kuh, G.D., Schuh, J.H., and Whitt, E.J. 1991. *Involving colleges: Successful approaches to fostering student learning and development outside the classroom.* San Francisco: Jossey-Bass.

Based on student involvement theory and a study of fourteen institutions, the authors define their concept of "involving colleges." These institutions promote student development and learning through a wide variety of out-of-class settings and experiences. Practical advice is offered on how to identify and develop these opportunities for out-of-class activities in order to change the campus climate and retain students.

Student Life

Delworth, U., Hanson, G., and Associates, eds. 1980. *Student services: A handbook for the profession.* San Francisco: Jossey-Bass.

The authors integrate theory and practice to help higher education professionals improve student services. They identify skills and competencies needed to deal with broad areas related to student life. In addition, they provide a useful discussion of evaluation to help researchers assess the effectiveness of programs.

Student Persistence

Noel, L., Levitz, D., and Saluri, D., eds. 1985. *Increasing student retention: Effective programs and practices for reducing the dropout rate*. San Francisco: Jossey-Bass.

As the title suggests, this is an action-oriented book based on nationwide surveys of retention practices and on consultations with over 375 institutions of higher education. The book's major sections address (1) the differences between students who persist and those who withdraw; (2) at-risk students; (3) key programs and activities that foster retention; and (4) guidelines and models for achieving retention results. Section four includes case studies of successful efforts in a variety of institutional types. The authors conclude their work with an excellent summary and ten-step "blueprint for action."

Tinto, V. 1987. *Leaving college: Rethinking the cause and cures of student attrition*. Chicago: University of Chicago Press.

This significant work details Tinto's widely recognized model of institutional departure. Comparing student withdrawal from college to Durkheim's anthropological discussion of withdrawal from community membership, Tinto stresses the importance of students' intellectual and social integration into the academic community. He also addresses the importance of early warning systems in alerting faculty to at-risk students. This book provides essential background for any study relating student goals and characteristics to persistence or withdrawal.

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CURRICULUM AND INSTRUCTION

Editors: Cameron L. Fincher and Alton L. Taylor
Contributors: Carolyn Griswold, James C. Hearn, and Ginger Marine.

Austin, A.E. 1990. Faculty cultures, faculty values. In *Assessing academic climates and cultures*, W.G. Tierney, ed. New Directions for Institutional Research 68:61-74. San Francisco: Jossey-Bass.

The author identifies four faculty cultures and discusses how the interplay of these cultures creates conflicts in which faculty members must choose the values of one culture over another. The author suggests that institutional leaders should analyze the cultural values of their faculty, educate faculty about discipline-based differences and establish clear campus priorities that are reflected in the reward system. Nationally, higher education leaders should increase awareness of these cultures among graduate students, emphasize the importance of teaching, broaden concepts of scholarship, and support variation in faculty career paths.

Cook, S.S. 1989. Improving the quality of student ratings of instruction: A look at two strategies. *Research in Higher Education* 30(1): 31-45. New York: Agathon Press.

The author examines the impact of differences in rating scales and training of student raters on student evaluations of teachers. The findings indicate that, net of the effects of teacher and course, training lessened leniency and halo effects. Cook finds the simple Likert scale most appropriate for teaching evaluation. However, results also indicate that rater training, not rating scale differences, is more important in encouraging effective student evaluation of teaching.

Coleman, D., Bolte, J.R., and Franklin, L. 1984. Academic calendar change impact on enrollment and instructional outcomes. *Research in Higher Education* 20(2): 155-166. New York: Agathon Press.

The authors examine the effects of change from quarter to semester calendar on student enrollment patterns leading to degree completion at eight institutions. Results indicate a drop in credit-hour load for juniors, seniors, and graduate students and an increase in course withdrawals. A postregistration survey at one institution indicated widespread misunderstanding among students and institutional representatives concerning the number of credit hours constituting a full course-load. Reduced course credit-hour loads and increased levels of withdrawal from courses have clear implications for institutions whose funding is dependent on student credit-hour enrollment, for students whose graduation is delayed, and for state subsidies of higher education.

Erdle, S., and Murray, H.G. 1986. Interfaculty differences in classroom teaching behaviors and their relationship to student instructional ratings. *Research in Higher Education* 24(2): 115-127. New York: Agathon Press.

This study attempts to control for perceived differences among content areas in defining criteria for effective teaching. Researchers combine observations of classroom teaching behaviors by trained raters of faculty members in thirteen different fields of study with student ratings of faculty effectiveness. Results indicate that certain teaching behaviors are correlated with student ratings, and that certain behaviors are more frequently seen among faculty in certain disciplines, as previous research has found. However, researchers also found only minor differences among the disciplines in the correlations between behaviors and perceived effectiveness, lending more significance to the results of student rating forms.

Feldman, K.A. 1986. The perceived instructional effectiveness of college teachers as related to their personality and attitudinal characteristics: A review and synthesis. *Research in Higher Education* 24(2): 139-213. New York: Agathon Press.

This article is a useful synthesis of research into the relationship between the personality and attitudinal traits of college teachers and the evaluation by college students of teaching effectiveness. The author finds significant differences in results of studies using self-reports of personality and attitudes of teachers and those using reports by colleagues and students. He offers several explanations for these findings.
An appendix outlines the results of each study.

Feldman, K.A. 1988. Effective college teaching from the students' and faculty's view: Matched or mismatched priorities? *Research in Higher Education* 28(4): 291-344. New York: Agathon Press.

One of a series of analyses by this author about college teaching and student evaluation of teaching, this useful and important synthesis of thirty-one studies explores the extent of similarity between the views of college students and college teachers about what constitutes good teaching. Students and faculty members were quite similar on thirteen of the twenty-two instructional dimensions examined, while, in other areas, they differed consistently. The author concludes that more needs to be discovered about how these similarities and differences affect how teachers teach, how students learn, and how teachers are evaluated. The article includes descriptions of the studies and an appendix outlining the results of each study as they pertain to each instructional dimension.

Green, P.J., and Stark, J.S. 1988. Collaborative roles in improving postsecondary teaching and learning. In *Improving teaching and learning through research*, J.S. Stark and L.A. Mets, eds. New Directions for Institutional Research 57:7-21. San Francisco: Jossey-Bass.

The authors describe ways in which institutional research can play a key role in the improvement of teaching and learning. The interrelated nature of institutional research, faculty research, and program evaluation is stressed.

Hativa, N., and Miron, M. 1990. Improving instruction of veteran physics professors. *Research in Higher Education* 31(6): 573-586. New York: Agathon Press.

In response to the concern for improving undergraduate instruction, the authors contrast two types of instructional assistance: a short-term presentation using existing research and videotaped examples for experienced and inexperienced professors and a long- term, weekly and biweekly series of consultations, observations, and feedback for experienced professors. The most significant improvement was reported in those receiving long-term assistance, with short-term assistance for inexperienced professors the next most helpful.

Hoenack, S.A., Weiler, W.C., Goodman, R.D., and Pierro, D.J. 1986. The marginal costs of instruction. *Research in Higher Education* 24(4): 335-417. New York: Agathon Press.

The authors examine the marginal economic costs of instruction at one large public university, particularly the costs of incremental increases in enrollment at the graduate level. The authors make a strong case for lodging control of graduate admissions and financial aid in departments, and suggest that the study of marginal costs may bring about a better distribution of resources and costs.

Lawrence, J.H. 1988. Faculty motivation and teaching. In *Improving teaching and learning through research*, J.S. Stark and L.A. Mets, eds. New Directions for Institutional Research 57:53-64. San Franciso: Jossey-Bass.

This article explores research on two methods of improving faculty motivation for the instruction of undergraduates: reward solutions and preparation solutions. Reward solutions focus on environmental changes that can be made to enhance faculty effort in teaching. Preparation solutions assume that faculty need enhanced skills to improve effectiveness. Lawrence posits the interrelated nature of these solutions, and identifies areas of needed research for the design of an effective model.

Lowther, M.A., Stark, J.S., Genthon, M.L., and Bentley, R.J. 1990. Comparing introductory course planning among full-time and part-time faculty. *Research in Higher Education* 31(6): 495-517. New York: Agathon Press.

This study explores the differences in course planning strategies between full- and part-time faculty. Although full-time instructors had stronger credentials and more experience in postsecondary education, few differences were evident among instructors in individual disciplines. Part-time faculty were more likely to seek assistance in planning from administrative leaders, rather than peer faculty. This study identifies no basis for the assumption that instructional planning by part-time faculty is inferior to that of full-time faculty.

Mets, L.A., and Stark, J.S. 1988. Critical directions for the future. In *Improving teaching and learning through research*, J.S. Stark and L.A. Mets, eds. New Directions for Institutional Research 57:81-88. San Francisco: Jossey-Bass.

An overview of the monograph, this chapter outlines several critical issues compelling institutional researchers to focus much of their efforts on teaching and learning: demands for accountability, the resulting need to assess effectiveness, increased calls for data, expansion of research technology, and concerns about drops in minority attendance. Institutional researchers will need to broaden the research base, engage in more comparative research, use and integrate several methodologies, and take advantage of opportunities to help translate theory into practice. The authors provide a description of several teaching and learning evaluation instruments from NCRIPTAL, and suggest sources for further reading.

Perry, R.P., and Dickens, W.J. 1987. Perceived control and instruction in the college classroom: Some implications for student achievement. *Research in Higher Education* 27(4): 291-310. New York: Agathon Press.

This study examines learned helplessness theory as an explanation of loss of control for students in the classroom setting. Results indicate that students experiencing a high percentage of noncontingent feedback, in which students' test papers are randomly assigned a percentage correct grade, encounter the most difficulty in benefiting from instruction. These students also are less likely to attribute their poor results to a difficult test or lack of effort. The authors cautiously suggest that reducing other types of noncontingent feedback in the classroom may be helpful in improving student achievement, and they encourage additional investigation of teaching practices that are effective in helping students deal with the noncontingent feedback they experience.

Pike, G.R., and Phillippi, R.H. 1989. Generalizability of the differential coursework methodology: Relationships between self-reported coursework and performance on ACT-COMP exam. *Research in Higher Education* 30(3): 245-260. New York: Agathon Press.

Of practical value to institutional researchers, this article outlines a method on linking student outcomes to attributes of academic programs. The authors test the generalizability of the Differential Coursework Patterns Project (DCPP) as a method of relating the residual change in student achievement over all, measures of learning for individual courses, and course-work patterns related to differences in student learning. The authors find cluster analysis a useful approach in identifying these relationships, and self-reports of course taking an effective alternative to transcript analysis. Results also suggest that indicators other than the SAT and GRE could prove useful, although the authors point out that actual student and testing variables must be considered in analyzing test results.

Ratcliff, J.L., ed. 1992. *Assessment and Curriculum Reform*. New Directions for Higher Education, 80. San Francisco: Jossey-Bass.

In this report the editor and authors show how assessment can be connected to student learning by studying the context of course offering patterns and intended learning behaviors. The Coursework Cluster Analysis Model (CCAM) is described in terms of linking the coursework patterns with specific learning types. College catalogue analysis is shown to reflect curriculum change. Analysis of a core curriculum with general education requirements, community college transfer credits, course syllabi, final examinations, faculty opinions about student learning, and cognitive development are described in this report. The authors urge that more attention be given by faculty to curriculum reform and show some approaches that they can use in bringing about effective change.

Stark, J.S., and Lowther, M.A. 1988. Perspectives on course and program planning. In *Improving teaching and learning through research*, J.S. Stark and L.A. Mets, eds. New Directions for Institutional Research 57:39-51. San Francisco: Jossey-Bass.

This article discusses the implications and benefits of defining curriculum as an academic plan, in light of continuing emphasis on student outcomes assessment. The fundamental nature of faculty involvement and the important role of institutional researchers are also discussed.

Stark, J.S., Lowther, M.A., Ryan, M.P., and Genthon, M. 1988. Faculty reflect on course planning. *Research in Higher Education* 29(3): 219-240. New York: Agathon Press.

In an exploratory study, the authors examine the factors that influence faculty planning in basic-level introductory courses. Based on results of interviews with eighty-nine faculty members of assorted fields and institutional types, the authors posit a theory of contextual filters such as program goals, student characteristics, textbooks, college type and mission, campus services, and external influences, through which context considerations must pass before becoming decisions on individual courses.

Young, R.E. 1987. Evaluating faculty development programs: Program goals first. In *Evaluating administrative services and programs*. J.R. Wergin and L.A. Braskamp, eds. New Directions for Institutional Research 56:71-82. San Francisco: Jossey-Bass.

The author discusses a critical aspect of evaluating faculty development programs: examining the goals of the programs to ensure that they are lucid, valid, and worthwhile. A case study of a hypothetical university is proposed, and the process of examining and evaluating such goals is outlined. The three-staged evaluation should be based on data about characteristics of the faculty, the development program, the university as a whole, and opinions of providers and users of the development programs. Goals and objectives should be evaluated against programs in other institutions, but more importantly in relation to the university's own missions, faculty, student body, and campus culture. In the author's view, this type of goals evaluation is vital if faculty development programs are to improve, or even to survive.

Cameron L. Fincher is Regents Professor and Director of the Institute of Higher Education at the University of Georgia in Athens.

Alton L. Taylor is Professor and Director of the Summer Session at the University of Virginia in Charlottesville.

Carolyn Griswold is a graduate assistant in the Institute of Higher Education at the University of Georgia.

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Ginger Marine is a graduate assistant in the Institute of Higher Education at the University of Georgia.

FACILITIES AND SPACE PLANNING

Editors: David G. Clements and Jo Anne Lowe

Bareither, H. D., and Schillinger, J. L. 1968. *University space planning*. Urbana, IL: University of Illinois Press.

The authors describe the procedures used in developing a feasible, efficient process for facilities planning, utilization, inventory, and maintenance at the University of Illinois. Basically, a procedure called the "Numeric Method" was developed that provided the ability to translate the educational program into physical facility requirements for the university. This methodology used "building blocks" of physical characteristics for establishing standards for analysis and projection of physical facilities requirements.

Castaldi, B. 1987. *Educational facilities, planning, modernization, and management*. 3d edition. Boston: Allyn and Bacon.

This book covers numerous aspects of planning and development used in establishing, modernizing, and operating efficient educational facilities and includes elementary and secondary school planning and design as well as that of colleges and universities. Topics also include curriculum development, the process and activities of educational needs identification, planning specific types of school facilities, and information on maintenance and energy efficient operation of school buildings. Psychological concepts, safety, comfort, and other fundamental and necessary elements of educational facilities planning and management are extensively evaluated.

Hamer, J. M. 1988. *Facility management systems*. New York: Van Nostrand Reinhold Company.

This guide defines "facility management" as the process of planning, implementing, maintaining, and accounting physical spaces and services for an organization, while simultaneously seeking to reduce the associated total cost. It then proceeds with the principles, practices, tools, and practical methods necessary to develop strategies for effective long-range plans and problem solving. The implementation of computer techniques, human procedures, systematization, and cost benefit analysis are also included. A central theme of this book is the balance of procedures, staff, and training with automation for the achievement of success in a facility management system.

Higher Education Facilities Inventory and Classification Manual. 1992. Washington, DC: U.S. Office of Education, Government Printing Office.

Last updated in 1973, this manual consists of extensive revisions updating facilities nomenclature, program classification, and data elements. Rearranged sections simplify the organization of the manual with previously appended material, particularly data definitions and codes, and room use definitions and codes. Terminology and codes classifying and assigning space in buildings and rooms, including organizing principles, purposes, and components, are defined.

Kaiser, H. H., ed. 1989. *Planning and managing higher education facilities*. New Directions in Institutional Research, no. 61. San Francisco: Jossey-Bass.

Authors represented in this volume reflect on the why, what, and how of the way they do their jobs. The topics covered develop from a global perspective to specific issues. Included are articles for establishing space standards and utilization guidelines, anticipating and evaluating facilities use, storing, retrieving, and maintaining large data files, and developing a budgeting formula for efficient maintenance of higher education facilities.

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Jo Anne Lowe is Institutional Research Analyst at the University of Georgia.

HUMAN RESOURCES

Editor: Timothy R. Sanford
Contributors: Stephen Flannelly, Nerissa Rivera, Elizabeth C. Stanley

Allard, C.E. 1984. *Assessing faculty salary equity*. AIR Professional File, no. 20. Tallahassee, FL: Association for Institutional Research.

Very useable set of guidelines for designing a study of faculty salary equity which reflects the proposed intents of the analysis and the faculty salary policies of the institution.

Astin, A.W., Korn, W.S., and Day, E.L. 1991. *The American college teacher: National norms for the 1989-90 HERI faculty survey*. Los Angeles: University of California, Graduate School of Education, Higher Education Research Institute.

This report presents the national norms on faculty attitudes and summarizes the results of a national survey of college and university faculty conducted by the Higher Education Research Institute in 1989-90. The results are based on the responses of 35,478 full-time faculty members at 392 institutions.

Blackburn, R.T., O'Connell, C. and Pellino, G. 1980. Evaluating faculty performance. In *Improving academic management: A handbook of planning and institutional research*, P. Jedamus, M.W. Peterson, and Associates, eds., 458-477.

The chapter advocates a comprehensive approach to assessing and evaluating faculty activity which integrates both summative and formative cases of faculty evaluation. The role of the institutional research office can be vital by developing campus wide information about faculty performance norms in conjunction with its research in program evaluation.

Bowen, H.R., and Schuster, J.H. 1986. *American professors*. New York: Oxford University Press.

The byline of the title, "A National Resource Imperiled," sets the tone for this classic work which reviews the status of the professoriate in American higher education. Research done by the authors suggests that the best students are no longer considering careers as faculty, threatening the future of our colleges and universities. A number of recommendations for improving the situation are offered.

The Carnegie Foundation for the Advancement of Teaching. 1989. *The condition of the professoriate: Attitudes and trends 1989*. Princeton.

This publication summarizes the results of The National Survey of Faculty conducted for the Carnegie Foundation for the Advancement of Teaching in 1989. It is based on responses from 5,450 faculty members from institutions representing each of the nine Carnegie classification types. A forward by Ernest L. Boyer identifies the three major issues as academic quality, teaching and research, and how faculty feel about the institution where they work.

Centra, J.A. 1989. Faculty evaluation and faculty development in higher education. In *Higher education: Handbook of theory and research*, J.C. Smart, ed., vol. 5. New York: Agathon Press.

This chapter explores the "... social, economic and historical factors that contributed to formalizing and extending both faculty evaluation and faculty development programs." (p. 153) It also examines existing methods and their supporting research, future areas for study, desired research needs. Also see Centra's 1979 book, *Determining faculty effectiveness*.

Clark, B.R. 1987. *The academic life*. Princeton: The Carnegie Foundation for the Advancement of Teaching.

As with the rest of Burton Clark's works, this one is rich with details and insights that might have escaped the less experienced researcher/writer. For a good overview read the excellent foreword by Ernest Boyer.

Clark, S.M., and Lewis, D.R. 1986. The case for an institutional perspective on faculty development. *The Journal of Higher Education* 57(2): 176-195.

The authors examine the vitality level and work characteristics of faculty in the institutional environment at a major research university. They recommend institutional efforts to enhance the vitality of existing faculty in three policy areas: environmental support for scholarly development; institutional support for faculty research and instructional development; and differentiated support for individual faculty needs.

Creswell, J.W., ed. 1986. *Measuring faculty research performance*. New Directions for Institutional Research, no. 50. San Francisco: Jossey-Bass.

Increasing emphasis on faculty research creates a need to assess scholarly performance both quantitatively and qualitatively. Pressure to boost research output creates conflicts between professors' teaching and research roles. This monograph explores aspects of these issues, the professional conflicts that result, the development of new researchers, and the need to develop effective research evaluation processes.

Dziech, B.W., ed. 1986. *Controversies and decision making in difficult economic times*. New Directions for Community Colleges, 14(1). San Francisco: Jossey-Bass.

This issue contains major sections on part-time faculty, the controversy of the open door, retrenchment and quality, and differential salaries for faculty.

Elmore, C.J., and Blackburn, R.T. 1983. Black and white faculty in white research universities. *The Journal of Higher Education* 54(1): 1-15.

This study examines the conditions for success for black faculty at prestigious institutions and concludes that black and white faculty are more alike than different; both groups share the same concerns about scholarly work, reward systems, and discrimination.

Hammond, P.B., and Morgan H.P., eds. 1991. *Ending mandatory retirement for faculty: The consequences for higher education*. Washington, DC: National Research Council.

This publication is the report of a committee established by the National Academy of Sciences to study the consequences of eliminating mandatory retirement for tenured faculty. The report considers age discrimination, the effects of uncapping faculty retirement, faculty performance and institutional quality, pensions, retirement programs and costs, and retirement incentives. The committee recommends a number of practical steps to address the problems raised by the elimination of mandatory retirement.

Lee, B.A., and Olswang, S.G. 1985. Legal parameters of the faculty employment relationship. In *Higher education: Handbook of theory and research*, J.C. Smart, ed., 1:213-253. New York: Agathon Press.

The article discusses the legal context of many aspects of the faculty/ institution employment relationship such as the rights of tenured and non- tenured faculty in the face of dismissal for cause, institutional financial crisis, program elimination, voluntary or involuntary retirement, and discrimination.

Lozier, G.G., and Dooris, M., eds. 1989. *Managing faculty resources*. New Directions for Institutional Research, 17(3): 73. San Francisco: Jossey-Bass.

This useful volume presents an overview of the area in a field where more studies are needed. Topics covered include the use of part-time faculty, affirmative action, and faculty renewal as well as others; especially helpful is the annotated bibliography to other sources in the field (chapter 6).

Mauch, J.E., Birch, J.W., and Matthews, J. 1990. The emeritus professor: Old rank - new meaning. ASHE-ERIC Higher Education Report 2. Washington, DC: The George Washington University.

"Now may be the time for a significant change in the meaning, the function, and the utilization of the emeritus professor in colleges and universities" (p. v). Elimination of a mandatory retirement age prompts examination of emeritus status, suggesting shift from honorary title to continuing role in university affairs with modified duties and "flexibility of conditions of employment" (p.iv).

Munitz, B. 1980. Examining administrative performance. In *Improving academic management: A handbook of planning and institutional research*, P. Jedamus, M.W. Peterson, and Associates, eds., 364-372. San Francisco: Jossey-Bass.

The author recommends that a formal and sophisticated system of administrative evaluation should be developed in universities. Criteria and objectives about expectations and institutional needs should be clearly specified at the time a candidate is hired.

Peterson, M.W., and Mets, L.A., eds. 1987. *Key resources on higher education governance, management, and leadership: A guide to the literature*. San Francisco: Jossey-Bass.

This book addresses the primary processes and major issues relating to the broad functions of governance, management, and leadership in colleges and universities. It includes chapters on human resources development, personnel administration, and equity and affirmative action. Each chapter includes an overview, a commentary on the literature and future trends and issues, and an annotated bibliography.

Russell, S.H., Cox, R.C., Williamson, C.L., and Porter, J.T. 1990. *Institutional policies and practices regarding faculty in higher education.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement. (NCES 90-333).

This report is one of a series of publications presenting the results of a 1988 National Center for Education Statistics study of faculty. It is based on data provided by institutional academic officers and includes sections on faculty size and composition, employment changes, tenure systems, collective bargaining and employment benefits.

Russell, S.H., Fairweather, J.S., Hendrickson, R.M., and Zimbler, L.J. 1991. *Profiles of faculty in higher education institutions 1988.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement. (NCES 91-389).

This report is another one in the series of publications presenting the results of the 1988 National Center for Education Statistics faculty study. It is based on responses of 7,404 full-time and part-time regular instructional faculty. The report includes sections on retirement and separation, activities and workload, compensation, women and minorities, and part-time faculty. The analysis in this report is more extensive than that of the earlier publication, *Faculty in higher education institutions, 1988*, 1990. (NCES 90-365).

Smart, J.C., ed. 1991. Higher education: Handbook of theory and research, vol. 7. New York: Agathon Press.

Smart's annual Higher Education Handbooks, which are sponsored by AIR and ASHE, always are a valuable resource to institutional researchers and planners, but this particular volume has a number of chapters that relate directly to human resources. "Differential Progress of Women Faculty: Status 1980-1990" (pp. 173-222), and "Faculty Mobility in an Organizational Context" (pp. 261-293) are good examples.

Whiteley, M.A., Porter, J.D., and Fenske, R.H., eds. 1992. *The primer for institutional research.* Tallahassee, FL: Association for Institutional Research.

The second edition of AIR's Primer is a rich resource in a number of areas, and two articles are directly related to human resources concerns--"Faculty Demand" by Michael McGuire (pp. 37-50) and "Faculty Salaries" by Richard Howard, Julie Snyder, and Gerry McLaughlin (pp. 51-62). Both articles also point the reader to useful, additional references.

Western Interstate Commission for Higher Education. 1991. *The literature on factors affecting faculty supply and demand: An annotated bibliography*. Boulder, CO.

This is a useful document containing a more than ample set of references. Companion pieces also recommended from WICHE are *Bringing into focus the factors affecting faculty supply and demand: A primer for higher education* and *State policymakers and faculty retirement projections beyond 1994: Effects of policy on individual choice*.

Additional Sources:

The American Association of University Professors (AAUP) publishes faculty salary data by rank by institution every spring in the AAUP Journal, *Academe*.

The College and University Personnel Association (CUPA) does an annual survey of faculty and administrator salaries and publishes a number of useful works on human resources issues.

The Office of Institutional Research at Oklahoma State University does an annual survey of faculty salaries by rank, field, and geographic area for all members of the National Association of State Universities and Land Grant Colleges (NASULGC).

The Office of Institutional Research at the University of Arkansas does an annual survey of administrator salaries at the major public universities with a separate break-down for NASULGC members.

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INFORMATION TECHNOLOGY

Editor: Daniel A. Updegrove

Organizations and Directories

ACM, Association for Computing Machinery, is the largest individual membership organization focused on computer science and related disciplines, offers numerous publications, conferences, and special interest groups, including university and college computing services (SIGUCCS). Write to ACM, PO Box 12114, Church Street Station, New York, NY 10257.

CAUSE, the association for managing and using information technology in higher education, serves over 1,000 campus and 50 corporate members. Individuals at CAUSE member institutions are eligible for free and discounted services: publications, conferences, exchange library, and constituent groups -- including one for institutional researchers and planners and another for data administrators. Write to CAUSE, 4840 Pearl East Circle, Suite 302E, Boulder, CO 80301-2487; phone (303) 449-4430; fax (303) 440-0461; electronic mail to info@cause.colorado.edu.

EDUCOM, is CAUSE's sister association, more focused on educational uses of information technology (EUIT) and networking (through its Networking and Telecommunications Task Force, NTTF, as well as staffing of CREN, the Corporation for Research and Educational Networking, which subsumed BITNET and CSNet several years ago). Individuals at EDUCOM's 600 member institutions qualify for free and discounted publications and other services, including conferences, seminars, and consulting. Write to EDUCOM, Suite 600, 1112 16th Street NW, Washington, DC 20036; (202) 872-4200; fax (202) 872-4318; e-mail to inquiry@educom.edu.

Seminars on Academic Computing (SAC) is an informal group that sponsors two annual events in Snowmass, C: a small weekend ssession for university executives and a three-day conference for academic computing directors. SAC also published an annual directory of academic computing facilities and salaries in higher education. Write Office of Continuing Education, Snell Hall 327, Oregon State University, Corvallis, OR 97331-1633; (503) 737-2052; e-mail contact is Debbie Bird at birdd@ ccmail.orst.edu.

Pamphlets

Evaluation Guidelines for Institutional Information Resources. 1988. Boulder, CO: CAUSE.

A joint CAUSE-EDUCOM resource for accreditation teams, consultants, and institutions performing self-studies. Free from CAUSE.

EDUCOM. 1992. *Using software: A guide to the legal and ethical use of software for members of the academic community*. Washington: EDUCOM/ADAPSO.

Hundreds of thousands have been distributed; first five free from EDUCOM.

Higher Education Information Resource Alliance. *What presidents need to know about the integration of information technologies on campus*. 1992. CAUSE.

Summary of background papers prepared by teams from five universities, under sponsorship of Association of Research Libraries (ARL), CAUSE, and EDUCOM. Distributed by CAUSE.

Periodicals

BYTE. Monthly plus special isues covering news, features, and reviews of desktop computing and related topics. Good balance of technical thoroughness and general accessibility.

CAUSE/EFFECT. The quarterly journal of CAUSE, focuses on management of information technology in colleges and universities.

Manage/IT. Newsletter about information technology management in higher education, free from CAUSE.

Computerworld. Broadest of the weeklies focused on the computing industry, covers organizational and management issues, new products and technical trends; rarely features higher education.

EDUCOM Review. Journal published bi-monthly by EDUCOM, focuses on academic networking and computing in the curriculum. Good source for emerging visions of information resource problems and prospects.

EDUCOM Update. Newsletter with association and campus news.

The Chronicle of Higher Education. Has excellent, weekly coverage of information technology topics, including campus projects, vendor initiatives, and new technology, plus a directory of new academic and administrative software. *The Chronicle* is also experimenting with electronic delivery of its information.

Books

A. Reference Works

Keen, P.G.W. 1991. *Every manager's guide to information technology: A glossary of key terms and concepts for today's business leader*. Boston: Harvard Business School Press.

Raymond, E., ed. 1991. *The new hacker's dictionary*. Cambridge: MIT Press.

Witty insights into computing and the people who devote their lives to it.

Rosenberg, J.M. 1992. *McGraw-Hill dictionary of information technology and computer acronyms, initials, and abbreviations*. New York: McGraw-Hill.

Vassilou, M.S., and Orenstein, J.A. 1992. *Computer professional's quick reference*. New York: McGraw-Hill.

Useful commands in UNIX, VMS, MVS, VM, DOS, and Macintosh; data communications including modems, kermit, and FTP; standards; and glossary.

B. CAUSE Professional Paper Series.
Brief monographs on key topics.

Baltzer, J.A. 1991. *People and processes: Managing the human side of information technology application*.

Literature review and experiences of Maricopa Community Colleges.

Elliott, R., et al. 1991. *Information security in higher education*.

Issues, policies, role of auditors and consultants.

Gleason, B. 1991. *Open access: A user information system*.

Design principles from Boston College's innovative approach to providing access to information resources.

Heterick, R. 1988. *A single system image: An information systems strategy.*

Components needed to deliver information resources as though from a single, integrated system.

Katz, R.N. and West, R.P. 1992. *Sustaining excellence in the 21st Century: A vision and strategies for college and university administration.* Proposals for achieving service, speed, quality, and productivity in an information-intensive organization.

Penrod, J.I. 1990. *The chief information officer in higher education.*

Based on a survey and extensive literature review.

Penrod, J.I., and Dolenc, M.G. 1992. *Reengineering: A process for transforming higher education.*

An overview of principles and processes applicable to higher education.

Sherron, G.T. 1990. *An information technology manager's guide to campus phone operations.*

Technical primer with management consideration.

C. EDUCOM Strategies Series on Information Technology.
Useful case studies and essays.

Anandam, K., ed. 1989. *Transforming teaching with technology: perspectives from two-year colleges.* Reading, MA: Addison-Wesley.

Community colleges, among the most aggressive and successful users of computers, have much to teach others.

Arms, C., ed. 1988. *Campus networking strategies.* Bedford, MA: Digital Press.

A survey of ten institutions with "grand plans" for networking. Covers planning, technical issues, financing and management of an ongoing service organization. Chapters on protocols and standards, wiring, national networks, and a glossary provide valuable technical background.

Arms, C., ed. 1989. *Campus strategies for libraries and electronic information*. Bedford, MA: Digital Press.

Good snapshot of a fast moving domain.

Graves, W.H., ed. 1989. *Computing across the curriculum: Academic perspectives*. Reading, MA: Addison-Wesley.

Companion to Anandam, but from viewpoints of four-year institutions.

Hawkins, B.L., ed. 1989. *Organizing and managing information resources on campus*. Reading, MA: Addison-Wesley.

Nineteen essays from well-respected university leaders on planning, organizing, financing, and supporting information technology and information resources. Highly recommended.

McCredie, J.W., ed. 1983. *Campus computing strategies*. Bedford, MA: Digital Press.

Very influential, still a useful perspective on the leading edge a decade ago.

Ringle, M., ed. 1992. *Computing strategies in liberal arts colleges*. Reading, MA: Addison-Wesley.

Essential reading for those in small institutions.

D. Networking

Arms, C. ed. 1988. *Campus networking strategies*. Bedford, MA: Digital Press.

See citation on previous page.

Kahin, B., ed. 1992. *Building information infrastructure*. New York: McGraw-Hill Primis.

Issues in the development of the National Research and Education Network, based on a Harvard symposium.

Kehoe, B.P. 1993. *Zen and the art of the Internet: A beginner's guide*. 2d ed. Englewood Cliffs, NJ: Prentice-Hall.

Excellent synthesis of Internet facts and lore, and best known of the Internet guidebooks; see also Krol, LaQuey, Tennant. First edition (1992), available as computer file, in several formats, via ftp from ftp.cs.widener.edu in directory, pub/zen.

Krol, E. 1992. *The whole Internet: User's guide & catalog*. Sebastopol, CA: O'Reilly and Associates.

Generally acknowledged to be the best of the Internet guidebooks.

LaQuey, T. L. 1993. *The Internet companion: A beginner's guide to global networking*. Reading, MA: Addison-Wesley.

Succinct and inexpensive.

Special Issue: Communications, Computers and Networks. *Scientific American* 265: 3, September 1991.

Nine diverse and accessible articles by a range of experts from Alan Kay to Al Gore.

Stoll, C. 1989. *The cuckoo's egg*. New York: Doubleday.

Remarkably engaging insider's view of international networking intrigue, portraying both the power and the fragility of academic networks; best seller, great, non-technical vacation read.

Tannenbaum, A.S. 1988. *Computer networks*. 2d ed. Englewood Cliffs, NJ: Prentice-Hall.

The classic textbook, quite technical.

Tennant, R. 1992. *Crossing the Internet threshold: an instructional handbook*. Berkeley, CA: Library Solutions.

Updegrove, D., Muffo, J., and Dunn, J.,Jr. Spring 1990. Electronic Mail and Networks: New Tools for Institutional Research and University Planning. *AIR Professional File*.

Dated, but useful.

Diverse Topics in Higher Education

Brand, S. 1987. *The Media Lab: Inventing the future at MIT*. New York: Viking.

Provocative view of MIT's Media Lab and its research and development on communications and computing.

Champine, G.A. 1991. *MIT Project Athena: A model for distributed campus computing*. Bedford, MA: Digital Press.

One view of the most extensive and expensive effort to integrate computing into the curriculum.

EDUCOM. 1992. *101 Success stories of information technology in higher education*. New York: McGraw-Hill Primis.

Most stories feature computing in the curriculum.

Kiesler, S. and Sproull, L. 1987. *Computing and change on campus*. New York: Cambridge University Press.

Social scientists' perspective on extensive use of computing on the campus of Carnegie Mellon University.

Ryland, J.N. 1992. Information technology and systems. In *College and university business administration*. ed. D.M. Greene. 5th ed. Washington, DC: National Association of College and University Business Officers.

Excellent summary of management issues; will be on every chief business officer's bookshelf.

Updegrove, D.A., and Updegrove, K.H. Fall 1991. Computers and health: Individual and institutional protective measures. *CAUSE/EFFECT* 14.

Concerns, remedies for computer users.

Diverse Topics with Implications for Higher Education

Emery, J.C. 1987. *Management information systems: The critical strategic resource*. New York: Oxford University Press.

Good text on MIS.

Garfinkel, S., and Spafford, G. 1991. *Practical UNIX security*. Sebastopol, CA: O'Reilly & Associates.

Readable introduction to security and UNIX.

Keen, P.G.W. 1991. *Shaping the future: Business design through information technology*. Boston: Harvard Business School Press.

Useful lessons for university administration from one of the leading business MIS experts.

Kernighan, B.W., and Pike, R. 1984. *The UNIX programming environment*. Englewood Cliffs, NJ: Prentice-Hall.

Keynes said, "In the long run, we're all dead." In the interim, we'll all be using UNIX. This is the classic text.

Kidder, T. 1981. *The soul of a new machine*. Boston: Little, Brown.

Pulitzer-prize winning story of competitive pressures in the minicomputer business.

Martin, James. *An information systems manifesto*. Englewood Cliffs, NJ: Prentice-Hall.

Good overview of the role of IS and IS managers by one of the most readable and prolific IS writers.

Wiener, Norman, et al. 1991. *The Arthur D. Little forecast on information technology and productivity: Making the integrated enterprise work*. New York: Wiley.

A look into the future by a leading high-tech consulting firm.

Local and Network Resources

Many colleges and universities have reference and tutorial materials on information technology topics, including training courses; campus newsletters; documentation and "tip sheets;" on-line campus-wide information services (CWIS); walk-in, hot-line, and electronic mail consulting services; electronic conferences, list servers, and news groups; price lists and promotional literature in the campus computer store; etc. Tutorials, manuals, help files, and hot lines packaged with commercial software and hardware are important, if frequently ignored, resources.

Finally, the last year has seen a proliferation of Internet navigation tools: Archie, Gopher, Veronica, Wide Area Information System (WAIS), and WorldWideWeb (WWW). Consult your campus networking organization or the Internet references above for details.

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INTERCOLLEGIATE ATHLETICS

Editors: Bruce I. Mallette and Cheryl Callahan

The world of intercollegiate athletics has seen many changes in recent years. NCAA and governmental legislation have impacted the way in which athletics operations are conducted, persistent media attention has kept intercollegiate athletics in the headlines, and the public's call for accountability by athletics programs has increased.

The role of institutional research in creating data systems to track athletic cohorts toward graduation is fairly clear. However, institutional researchers will be increasingly called upon to assist in evaluation questions raised about the campus experiences of student--athletes. Among the campus professionals who will raise these questions are: coaches, faculty, athletic administrators, career counselors, residence life staff, and health professionals. The following annotated bibliography is a brief sampling of the literature related to student-athletes and their experiences.

While there are additional sources available, these references can serve as a starting point for understanding many of the issues surrounding the study of student-athletes. Within these articles are other reference lists that can be tapped for further information.

Blinde, E.M. 1989. Female intercollegiate athletes - changes and implications. *Journal of Physical Education, Recreation and Dance* (March): 33-37.

Chu, D. 1989. *The character of American higher education and intercollegiate education and intercollegiate sport*. Albany, NY: State University of New York Press.

This text provides a historical account of the growth of intercollegiate athletics, followed by an overview of colleges' and universities' rationale for the existence of sports. The book addresses the effects of sport on individual participants, the economic benefits of sport, and the costs of a campus sport.

Danish, S.J. 1983. Musing about personal competence: The contributions of sport, health, and fitness. *American Journal of Community Psychology* 2(3): 221-240.

Edwards, H.C. 1983. Educating black athletes. *The Atlantic Monthly* 252:31-38.

Edwards, H.C. 1984. The black 'dumb jock' - An American sports tragedy. *The College Board Review* 131:8-13.

Gurney, G.S., and Stuart, D.L. 1987. Effects of special admission, varsity competition, and sports in freshman student-athletes' academic performance. *Journal of College Student Personnel* 28(4): 298-302.

Henderson, G. 1986. Advising black student-athletes. *NACADA Journal* 6(1): 4-11.

Jones, E.L. 1986. Contemporary issues in intercollegiate athletics - an annotated bibliography and proposed course outline: Contemporary issues in collegiate sports. *NACADA Journal* 6(1).

Lapchick, R.E. 1987. On the mark - putting the student back in student-athletes. Lexington, MA: D.C. Heath and Company.

Lapchick, R.E. 1989. Future of the black student-athlete: Ethical issues of the 1990s. *Educational Record* (Spring): 32-35.

A series of recommendations address the environment in which athletes, specifically black athletes, live on college campuses. These recommendations are based on the fact that black athletes feel isolated on campuses and are not involved in other campus activities.

McLaughlin, B. 1986. Advising college athletes in the 1980s: A higher education abstracts review. *NACADA Journal* 6(1): 31-38.

Mathes, S., and Gurney, G. 1985. Factors in student athletes' choices of colleges. *Journal of College Student Personnel* 26(4): 327-333.

Oliva, L.J. 1987. How to clean up college sports. *AGB Reports* 29(1): 22-23.

Ten guides to action are presented to help college officials exercise control over athletics, including: accept responsibility, establish campus rules, reject justification of shoddy practices, and know what is going on.

Oliva, L.J. 1989. Do the right thing about athletics. *AGB Reports* 31(4): 11-13.

This commentary states that responsibility for athletics belongs to the campus CEO and provost, and trustees should see that this responsibility is accepted. It is also suggested that people with an understanding of athletics be placed on visiting regional accreditation teams.

Pearson, R.E., and Petipas, A.J. 1990. Transitions of athletes: Developmental and preventive perspectives. *Journal of Counseling and Development* 69:7-10.

Pinkerton, R.S., Hinz, J.D., and Barrow, J.C. 1989. The college student athlete: Psychological considerations and interventions. *Journal of American College Health* 37(March): 218-226.

Ryan, F.J. 1989. Participation in intercollegiate athletics: Affective outcomes. *Journal of College Student Development* 30(2): 122-128.

Shriberg, A. and Brodzinkski, F.R., eds. 1983. *Rethinking services for college athletes*. San Francisco: Jossey-Bass.

Individual chapters include rules issued by governing boards, special problems of female and minority athletes, and rights and responsibilities of the student-athlete.

Smallman, E., Sowa, C.J., and Young, B.D. 1991. Ethnic and gender differences in student-athletes' responses to stressful life events. *Journal of College Student Development* 32(3): 230-235.

This article presents research findings on ethnic and gender differences in student athletes' responses to stressful life events that correlate to depression, anxiety, somatic discomfort and stress. The results show that experiencing a stressful life event may be more difficult on black athletes than white athletes, and that males may experience more anxiety than females.

Stone, J.A., and Strange, C.C. 1989. Quality of student experiences of freshman intercollegiate athletes. *Journal of College Student Development* 30(2): 148-153.

Thelin, J.R. and Wiseman, L.L. 1989. *The old college try: Balancing academics and athletics in higher education*. Washington, DC: The George Washington University.

The main theme of this text is athletic policies should be considered integral to the educational mission, philosophy, and structure of the institution. The writers believe that college sports are a matter of public policy, academic governance, institutional finance, and economics.

Weistart, J.C. 1987. College sports reform: Where are the faculty? *Academe* 3(4): 12-17.

Weistart argues that there has been a consistent failure by college faculty to respond to improprieties in college athletics. The structure and link between academics and athletics should be re-examined and the responsibility of the faculty should be strengthened.

Whittemore, W. 1985. The college student athlete: Special needs and development interventions - a survey of the literature. *The National Advisor* (Fall): 22-33.

Yiannikis, A., Mcintyre, T.D., Melnick, M.J., and Hart, D.P. 1987. *Sport sociology*. Dubuque, IA: Kendall/Hunt Publishing Co.

Zingg, P.J. 1982. Advising the student athlete. *Educational Record* 16:16-19.

This article is a theoretical and philosophical essay on the successes and failures of intercollegiate athletics. It stresses viewing the athlete as an individual first, a member of an academic community second, and a part of an intercollegiate athletic team third. Anything done for the third priority, which jeopardizes the first two, needs to be re-thought and re-evaluated.

Selected Resources:

Institutional researchers have available many resources for learning about the intercollegiate athletics enterprise. The following resources are an excellent base with which to begin the education of institutional researchers in their oversight and reporting on intercollegiate athletics.

Keeping faith with the student-athlete: A new model for intercollegiate athletics. Report of the Knight Foundation Commission on Intercollegiate Athletics.

In October 1989 the Trustees of the Knight Foundation created this Commission and directed it to propose a reform agenda for intercollegiate athletics. The Commission spent over a year in study and debate, and talked with more than eighty experts. The Commission's report was released in March 1991. The reforms offered center around the "one-plus-three" model consisting of the "one" (presidential control) directed toward "three" (academic integrity, financial integrity, and accountability through certification). A follow-up report was released in March 1992, "A Solid Start: A Report on Reform of Intercollegiate Athletics." Free copies can be obtained by written request to:

Knight Foundation
Commission on Intercollegiate Athletics
301 South Brevard Street
Charlotte, NC 28202

U.S. General Accounting Office (GAO) reports to Congress during the congressional journey of the 'Student Right-to-Know Act':

GAO/HRD-89-107FS, Fact Sheet for the Chairman, Subcommittee on Postsecondary Education, Committee on Education and Labor, House of Representatives titled, 'Student Athletes: Information on Their Academic Performance'. (Released May 1989).

GAO/HRD-89-157BR, Briefing Report to the Chairman, Committee on Labor and Human Resources, U.S. Senate, titled, 'Student Athletes: Most Schools Meet Proposed Academic Performance Reporting Requirements' (released September 1989).

Free copies (while they last) are available by written request to:

U.S. General Accounting
Post Office Box 6015
Gaithersburg, MD 20877

To avoid delays, include the report number and entire description in your request.

U.S. House Hearings on Student Athlete Right-to-Know Act (held in May 1989).

This 208-page text is full of various position statements by leading members of the intercollegiate athletics community. This text, now out of print, can be found in a library that is a government depository under the government documents call number: Y4.Ed8/1:101-122.

U.S. Senate Hearings on Student Right-to-Know Act (held in September 1989).

This 149-page text expands upon the viewpoints provided during the House hearings. This text, now out of print, can be found in a library that is a government depository under the government documents call number: Y4.L11/4:s.hrg.101-392.

1987-1988 National Study of Intercollegiate Athletics.

The American Institutes for Research released its $1.75 million study on November 29, 1988. The study, commissioned by the NCAA Presidents Commission, investigated the effects of participation in intercollegiate athletics on student-athletes. To get a free set of reports, send a written request asking for all volumes to:

AIR Study
NCAA Publishing
P. O. Box 7347
Overland Park, KS 66207-0347

The NCAA News.

This is the weekly newspaper of National Collegiate Athletic Association (NCAA). Important rule updates, reviews of eligibility legislation, and proceedings of NCAA meetings are routinely included. Contact NCAA Publishing at (913) 339-1906 for subscription information on this and other NCAA publications.

Academic Athletic Journal.

This journal was a joint publication through Spring 1989 of the National Association of Academic Advisors for Athletes (N4A) and the Athletic Guidance Center in San Diego. The journal is now an independent publication of N4A. For subscription information contact:

Jack M. Rivas
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JUCO Review.

This is the news publication of the National Junior College Athletic Association (NJCAA) and is published September through May. For subscription information contact the NJCAA at (719) 590-9788.

NAIA News.

This is the monthly newsletter of the National Association of Intercollegiate Athletics (NAIA) and is the NAIA's equivalent of The NCAA News. For subscription information contact the NAIA at (816) 842-5050.

Getting copies of federal legislation.

A good source for current legislation is The Chronicle of Higher Education weekly section on "Government & Politics." Within this section are the subsections of "Status of Federal Legislation" and "Washington Almanac." They provide an overview of each bill, how it is listed, and any hearings planned on the bill. The question is, how can you get a copy of the legislation?

First, you need to know the name of the bill. For example, the "Student Athlete Right-to-Know Act" was the initial name of the legislation introduced in Congress that eventually became the "Student Right-to-Know and Campus Security Act." Second, you need to know how the bill was numbered. In this case, it was H.R. 1454 and S. 580. Third, you need to know the difference between Senate and House procedures.

Senate bills, reports, and documents are distributed to the public through the Senate Document Room. House bills, reports, and documents are distributed to the public from the House Document Room. Public Laws are distributed by both document rooms. Only Senators, Representatives, Congressional staff, and accredited press representatives can receive both House and Senate documents from either document room. Institutional researchers must be room specific when sending a written request.

However, there is a "local alternative". If you are strolling the D.C. Mall area, the document rooms are open to the public between the hours of 9:00 a.m. and 5:30 p.m. Telephone inquiries concerning the status and availability of legislative items may be made by calling the Senate Document Room at (202) 224-7860 and the House Document Room at (202) 225-3456. Requests for bills, however, must be in writing and sent to:

Senate Document Room	or	House Document Room
B-04, Hart Senate Office Building		B-18, Ford Building
Washington, DC 20510		Washington, DC 20515

Specify the bill's name and number.

Another option, if you know who in the House or Senate introduced the legislation, is to call his/her Capitol Hill office and request a copy. To get the phone number call the Capitol switchboard at (202) 224-3121 during regular work hours and ask for the Representative's or Senator's office. After you are connected, make sure you ask for the direct number to the office.

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INTERINSTITUTIONAL COMPARISONS AND NATIONAL DATA BASES

Editors: R. Dan Walleri, Adrian H. Harris, Charles S. Lenth, Douglas J. Lynd, Alene Bycer Russell and Deborah J. Teeter

Appreciation is extended to members of the AIR Data Advisory Committee (1991-92) for their thoughtful review of various drafts of this section.

Interinstitutional Comparisons

Bentley, R.J., Blackburn, R.T., and Bieber, J.P. 1990. Research note: Some corrections and suggestions for working with the national faculty survey databases. *Research in Higher Education* 31 (6): 587-604.

Brinkman, P.T. ed. 1987. *Conducting interinstitutional comparisons*. New Directions for Institutional Research, no. 53. San Francisco: Jossey-Bass.

See the chapter by Brinkman and Teeter, "Methods for Selecting Comparison Groups."

Brinkman, P.T., and Krakower, J. 1983. *Comparative data for administrators in higher education*. Boulder, CO: National Center for Higher Education Management Systems.

Carnegie Commission on Higher Education. 1976. *A classification of institutions of higher education*. Berkeley, CA: Carnegie Commission on Higher Education.

This publication set the standard now commonly used in displaying data for institutions of higher education by level.

Della Mea, C.L. 1989. A comparison of two procedures for peer group assignment of institutions of higher education. Ph.D. dissertation, Virginia Polytechnic Institute and State University.

Elsass, J.E., and Lingenfelter, P.E. 1980. *An identification of college and university peer groups*. Springfield, IL: Illinois Board of Education.

Ewell, P.T. ed. 1989. *Enhancing information use in decision making*. New Directions for Institutional Research, no. 64. San Francisco: Jossey-Bass.

Sets the organizational context and standards for information use. Also see John Dunn, Jr.'s chapter, Electronic Media and Information Sharing.

Harris, A.H. 1978. Apples are never oranges: The comparability question revisited. Paper presented at the annual meeting of the Association for Institutional Research, Houston.

This paper deals with the issues raised and the conclusions reached by the NCHEMS Measures and Definitions Subgroup, in preparing a draft manual titled, Information Exchange Procedures for Major Research Universities, Field Review Edition, 1977. Also see Topping (1979).

Jones, D.P. 1982. *Data and information for executive decisions in higher education*. Boulder, CO: National Center for Higher Education Management Systems.

Lenth, C.S., ed. 1991. *Using national data bases*. New Directions for Institutional Research, no. 69. San Francisco: Jossey-Bass.

For primary data sources see chapter by Lenth and Christal, National Data Bases and Statistical Resources on Higher Education. Also see section on National Data Bases.

McKeown, M.P., and Moore, N. 1990. A new method for selecting peer institutions. Paper presented at the annual meeting of the Rocky Mountain Association for Institutional Research, Missoula, MT.

Peng, S.S., and Korb, R.A. 1989. Using national data bases in analyzing the institutional impacts of student aid. In *Studying the impact of student aid on institutions*, ed. R.H. Fenske. New Directions for Institutional Research, no. 62. San Francisco: Jossey-Bass.

Presley, J.B., ed. 1989. *Organizing effective institutional research offices*. New Directions for Institutional Research, no. 66. San Francisco: Jossey-Bass.

Includes several chapters dealing with data standardization and information management, which, of course, forms the basis for interinstitutional comparisons.

Teeter, D.J. 1983. The politics of comparing data with other institutions. In *The politics and pragmatics of institutional research*, ed. J.W. Firnberg and W.F. Lasher. New Directions for Institutional Research, no. 38. San Francisco: Jossey-Bass.

Teeter, D.J., and Brinkman, P.T. 1987. Peer institutional studies/institutional comparisons. In *A primer on institutional research*, ed. J.A. Muffo and G.W. McLaughlin. Tallahassee, FL: Association for Institutional Research.

Teeter, D.J., and Christal, M.E. 1987. Establishing peer groups: A comparison of methodologies. *Planning for Higher Education* 15 (2): 8-17.

Terenzini, P.T., Hartmark, L., Lorang, W.G. and Shirley, R.C. 1980. A conceptual and methodological approach to the identification of peer institutions. *Research in Higher Education*. 12: 347-364.

This is a widely used methodology resource for selecting peer institutions.

Topping, J. 1979. *Information exchange procedures for major research universities*. Boulder, CO: National Center for Higher Education Management Systems.

Informative set of publications relating to the application of information exchange procedures to major research universities, resulting from the efforts of a Major Research Universities Task Force appointed by NCHEMS in 1975. Three volumes: Alternative Conceptual Approaches; Evaluation of IEP Costing Procedures; and Technical Diary.

Data Bases on Higher Education in the United States

The information in this section is condensed from the *Compendium of National Data Sources on Higher Education*[1], which identifies nearly ninety surveys, data bases, reports, and statistical digests covering nine broad higher education topics. Focusing on national data sources that are updated on a regular basis, the Compendium provides for each source: title, description, data collected/reported, data availability, current data uses and publications, and source/contact. Readers are directed to the Compendium for more detailed information on the data sources described here, and for additional data sources.

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[1] *The *Compendium* is published by the State Higher Education Executive Officers, 707 17th Street, Suite 2700, Denver, CO 80202-3427 (303-299-3686).

A. Data on Institutional Characteristics

Several organizations produce directories and statistical abstracts on postsecondary education, usually on an annual basis. Perhaps the most comprehensive are the *IPEDS Institutional Characteristics Survey* and *Directory of Postsecondary Institutions*, produced by the National Center for Education Statistics (NCES), U.S. Department of Education.

B. Enrollments and Completions

Much of the information on enrollments and completions are derived from the IPEDS surveys (fall enrollment, completions, etc.) available from the NCES. Sources on postgraduate education include the *Survey of Earned Doctorates* (National Research Council/National Academy of Sciences), and the *Survey of Graduate Students and Postdoctorates in Science and Engineering* (National Science Foundation).

C. Student Demographics and Characteristics

There are numerous sources, both federal and non-federal, on student characteristics. These vary from the *High School Profile Reports* from the American College Testing Program, to *The American Freshman: National Norms* (Cooperative Institutional Research Program, University of California at Los Angeles), to the Western Interstate Commission on Higher Education's *High School Graduates: Projections by State, 1986 to 2004*.

D. Student Longitudinal Data

NCES sponsors several national longitudinal studies which have become a rich resource for the analysis of student enrollment patterns and outcomes. The *National Longitudinal Study of 1972* (NLS-72) has probably been the most extensively utilized; for example, see Pascarella, E. T., and Terenzini, P. T. (1991), *How College Affects Students* (San Francisco: Jossey-Bass). The other two NCES longitudinal studies are *High School and Beyond* (HS&B), base year 1980, and the *National Education Longitudinal Study of 1988* (NELS 88).

E. Student Financial Aid

In addition to annual reports from organizations such as the College Entrance Examination Board and the National Association of State Scholarship and Grant Programs, the NCES initiated *The National Postsecondary Student Aid Study* (NPSAS) in 1987. This latter study focuses on how students pay for postsecondary education and is conducted every third year.

F. Financial Data

There are numerous federal and non-federal organizations that publish financial statistics on higher education, most on an annual basis. These include the NCES, *IPEDS Financial Survey*, and the National Science Foundation's *Survey of Federal Support to Universities, Colleges, and Selected Nonprofit Institutions*. For statistical comparisons see Minter, J. (Ed.), *Management Ratios #2* and *Fund Raising Management Ratios #1* (Boulder, CO: National Data Service).

G. Tuition and Fee Charges

The Western Interstate Commission for Higher Education (WICHE), the South-ern Regional Education Board (SREB), and various national organizations publish institution-specific tuition and fee data. Also see Washington Higher Education Coordinating Board, *A National Comparison: Tuition and Required Fees* (Olympia, WA).

H. Faculty/Staff Salaries

In addition to several NCES studies, see *The Annual Report on the Economic Status of the Profession*, by the American Association of University Professors, and surveys by the College and University Personnel Association.

I. Physical Facilities, Libraries and Assets

Perhaps the most often cited source in this area is the *APPA Comparative Costs and Staffing Report*, from the Association of Physical Plant Administrators of Universities and Colleges. Also see *Scientific and Engineering Research Facilities at Universities and Colleges* by the National Science Foundation.

J. Sourcebooks and Comparative Studies

The American Council on Education, the U.S. Department of Education (i.e., NCES) and the National Science Foundation all publish sourcebooks covering such topics as the progress of minorities in postsecondary education, state governance structures, and "indicators" of the condition of education among others.

Data Bases on Higher Education in Canada

The following are a sample of publications available from Statistics Canada, Ottawa, Ontario, Canada K1A 0T6 (telephone: (613) 951-8116).

Advance Statistics of Education (Catalogue No. 81-229)

An annual publication which presents the latest available data on education. It assembles data on institutions, teachers, enrollment, degrees, and expenditures at all levels of education in Canada, the provinces and territories.

Education in Canada (Catalogue No. 81-220)

An annual publication summarizing data on institutions, enrollment, teachers, graduations and expenditures for all levels of education in Canada. The publication provides the number of institutions by level, type and size of full-time enrollment, etc.

Universities: Enrollment and Degrees (Catalogue No. 81-204)

A profile of full- and part-time enrollment in credit programs at degree granting institutions classifying enrollment in each institution by sex and level of program.

Enrollment in Community Colleges (Catalogue No. 81-222)

Full- and part-time enrollment in university transfer and career/technical programs in community colleges and related institutions.

University Finance Trend Analysis (Catalogue No. 81-260)

Provides ten years of financial data and analysis on all Canadian universities. University expenditures are shown by fund and functional area with revenues by source.

Financial Statistics of Education (Catalogue No. 81-208)

Consolidated expenditures displayed by level of education and by direct source of funds.

Salaries and Salary Scales of Full-Time Teaching Staff at Canadian Universities (Catalogue No. 81-258)

A series of three publications - preliminary, supplementary and annual. Presents salaries and salary scales by institution.

Teachers in Universities (Catalogue No. 81-241)

Full-time university teachers at degree granting institutions classified by sex and rank. Also provided are distributions by field of study, etc.

Educational Staff of Community Colleges and Vocational Schools (Catalogue No. 81-254)

A profile of full-time educational staff in community colleges and vocational schools describing the number of teachers, median salaries, sex, median age, etc

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PLANNING

Editor: John A. Dunn, Jr.

Overview

Birnbaum, R. 1988. *How colleges work: Patterns of organization, management and leadership in higher education.* San Francisco: Jossey-Bass.

A clear view of the complexities and political realities of the context in which planning needs to take place.

Cohen, M.D., and March, J.G. 1986. *Leadership and ambiguity: The American college president.* 2nd ed. Boston: Harvard Business School Press.

An indispensable view of the role of the president, with descriptions of how to manage in "organized anarchy," including the "garbage-can model."

Cornford, F.M. 1908. *Microcosmographia academica: Being a guide for the young academic politician.* Cambridge (England): Bowes and Bowes.

A brief, wisely humorous book by a Cambridge don, alas out of print and very hard to find. Full of good advice, such as "never do anything for the first time."

Davis, S.M. 1987. *Future perfect.* Reading, MA: Addison-Wesley.

A provocative look at the impact of technology and new management and marketing ideas on the kinds of products and services offered as well as on the ways businesses are managed and services provided.

Dunn, J.A., Jr. et al. *Decision processes: College and university business administration,* 5th ed. In press. Washington, DC: National Association of College and University Business Administrators.

A re-thinking of the process of institutional decision-making, involving the integration of strategic vision with long-range guidelines and present pressures in an annual "focusing in," followed by a variety of implementation activities.

Keller, G. 1983. *Academic strategy: The management revolution in American higher education*. Baltimore: Johns Hopkins University Press.

The classic overview of academic strategic planning.

Mintzberg, H. 1987. Crafting strategy. *Harvard Business Review*. July-August: 66-75.

A landmark article describing the way strategy evolves, much as the sculptor both molds the clay and responds to its changing form.

Norris, D.M. and Poulton, N.L. 1991. *A guide for new planners*. Ann Arbor, MI: Society for College and University Planning.

An excellent starting point for beginners and worthwhile refresher for "experts." Includes a superb 35-page bibliography.

Peterson, M.W. 1986. Continuity, challenge and change: An organizational perspective on planning, past and future. *Planning for College Education* 14: 3. Ann Arbor: Society for College and University Planning.

A masterful overview of the changes in subject matter and approach in college and university planning in the last several decades, and a projection of fundamental revolutions and issues to be dealt with in the future.

Peterson, M.W. and Mets, L.A. 1987. *Key resources on higher education governance, management and leadership*. San Francisco: Jossey-Bass.

A comprehensive guide to the literature, with introductory essays in each area (including academic and institutional planning) and evaluations of the contributions of the leading works in the field.

Simon, H. 1976. *Administrative behavior*. 3d ed. New York: Free Press.

The economist's articulation of fundamental concepts such as "satisficing" that underlie current thinking about managerial decision-making.

Academic Planning

Chickering, A.W., Halliburton, D., Bergquist, W.H., and Lindquist, J. 1977. *Developing the college curriculum: A handbook for faculty and administrators*. Washington, DC: Council for the Advancement of Small Colleges.

Theory and application on curriculum rationale, design, practice, and implementation.

Bers, T.H., and Sullivan, T.J. 1985. Planetary leadership: A presentation in the peripatetic method of effecting change in college - a case study in management by walking around. *Planning for Higher Education* 13 (4). Ann Arbor: Society for College and University Planning.

Systematic planning may be helpful, but talking with people is indispensable.

Jedamus, P., Peterson, M.W. and Associates. 1980. *Improving academic management: A handbook of planning and institutional research*. San Francisco: Jossey-Bass.

A thorough, sound review of the field, with thirty-one chapters addressing different aspects of planning and institutional research. See especially Heydinger's article on "Planning Academic Programs" which describes a taxonomy of planning styles or approaches.

Shirley, R.C., and Volkwein, J.F. 1978. Establishing academic program priorities. *Journal of Higher Education* 49: 472-488.

As noted in the last edition of the AIR Bibliography, "the authors present a practical yet conceptually rigorous approach for obtaining a set of academic program priorities."

Institutional Planning

Anderson, R.E., and Meyerson, J.W., eds. 1990. *Financial planning under economic uncertainty*. New Directions for Higher Education, no. 69. San Francisco: Jossey-Bass.

A useful alert to fundamental economic problems facing the nation and to the effects of economic volatility, and some suggestions for buffering it.

Brinkman, P., ed. 1987. *Conducting interinstitutional comparisons*. New Directions for Institutional Research, no. 53. San Francisco: Jossey-Bass.

While comparisons may be odious, they may be required by coordinating boards; done well, they can be helpful in self-understanding. The book covers procedures, dangers, and tips.

Cope, R.G. 1987. Opportunity from strength: Strategic planning clarified with case examples. *ASHE-ERIC Higher Education Reports* 8. Washington, DC: Association for the Study of Higher Education.

Succinct statement of the principles of strategic planning and their application to eleven quite different institutions.

Frances, C., Huxel, G., Meyerson, J., and Park, D. 1987. *Strategic decision-making: Key questions and indicators for trustees*. Washington, DC: Association of Governing Boards of Colleges and Universities.

A careful checklist of critical decision areas and of the kinds of information senior administrators and board members can find useful in understanding and monitoring them.

Lelong, D., and Shirley, R. 1984. Planning: Identifying the focal points for action. *Planning for Higher Education* 12 (4). Ann Arbor: Society for College and University Planning.

A succinct and practical statement of major issues to be addressed and focal points for action in the planning process. Also has an excellent bibliography.

Morrison, J.L., Renfro, W.L., and Boucher, W.I., eds. 1983. *Applying methods and techniques of futures research*. New Directions for Institutional Research, no. 39. San Francisco: Jossey-Bass.

Many plans fail because they only project past trends and developments into the future. The authors review several techniques for avoiding this problem, including environmental scanning, judgmental forecasting and multiple scenarios.

Schmidtlein, F.A., and Milton, T.H. 1990. *Adapting strategic planning to campus realities*. New Directions for Institutional Research, no. 67. San Francisco: Jossey-Bass.

Diverse approaches for different settings and challenges, with thoughtful commentary on the need to adapt strategic planning concepts to specific situations.

Uhl, N.P., ed. 1983. *Using research for strategic planning*. New Directions for Institutional Research, no. 37. San Francisco: Jossey-Bass.

Includes chapters on assessing the external environment and the institution's goals, on program evaluation, marketing, fact books, and other tools.

Special areas of interest

Chaffee, E.E. 1984. Successful strategic management in small private colleges. *Journal of Higher Education* 55 (2). Ohio State University Press.

Fourteen small colleges' attempts to deal with financial stringency; a review of "adaptive" and "interpretive" strategies, with insights for practice.

Dunn, J.A., Jr., ed. 1986. *Enhancing the management of fund raising*. New Directions for Institutional Research, no. 51. San Francisco: Jossey-Bass.

Basic ideas on the planning and management of fund-raising activities.

Dunn, J.A., Jr. 1989. *Financial planning guidelines for facility renewal and adaption. A joint project of the Society for College and University Planning, the National Association for College and University Planning, the Association Of Physical Plant Administrators, and Coopers and Lybrand*. Ann Arbor: Society for College and University Planning.

How to think about the level of support needed for systematic upkeep and adaptation of the physical plant.

Dunn, J. A., Jr. 1991. How colleges should handle their endowment. *Planning for Higher Education* 19 (3). Ann Arbor, MI: Society for College and University Planning.

A critique of the aspirations colleges and universities have for their endowments, and research suggesting that a focus on contributions to endowment (gifts, surpluses) are much more important to long-term growth than are payout rates.

Duronio, M. A., and Loessin, B. A. 1990. The role of planning in successful fundraising in ten higher education institutions. *Planning for Higher Education* 18 (3). Ann Arbor, MI: Society for College and University Planning.

A thoughtful study of the role of planning in institutions that raised more money than would have been expected given their characteristics.

Hawkins, B.L., ed. 1989. Organizing and managing information resources on campus. *EDUCOM Strategy Series on Information Technology*. McKinney, TX: Academic Computing Publications.

A sound review of the managerial and planning issues involving information technology, with thoughtful approaches to their solution.

Lozier G.G., and Chittipedi, K. 1986. Issues management in strategic planning. *Research in Higher Education*. 24 (1). New York: Agathon Press.

Planning focused on identification of critical issues and the management of organizational response to them.

Massy, W.F. 1990. *Endowment: Perspectives, policies, and management*. Washington, DC: Association of Governing Boards of Colleges and Universities.

An up-to-date review of the best thinking on endowment planning and management. (Also see Dunn 1991.)

Myran, G.A. 1983. *Strategic management in the community college*. New Directions for Community Colleges, no. 44. San Francisco: Jossey-Bass.

Much of the material covered in other sources in this bibliography, but focused on the community college.

Schmidtlein, F.A. 1990. Why linking budgets to plans has proved difficult in higher education. *Planning for Higher Education*. 18 (2). Ann Arbor, MI: Society for College and University Planning.

While the article is diagnostic rather than prescriptive, the difficulties cited are real and the insights can be helpful in avoiding the problems.

Storey, W. 1991. Creating space standards: The California solution. *Planning for Higher Education* 20 (1). Ann Arbor: Society for College and University Planning.

Common sense applied in a particularly controversial area.

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POLICY ANALYSIS

Editor: Martha L. Casey
Contributor: Judith I. Gill

The first series of listings contain books and articles which give a theoretical context for policy analysis and describe the field in its broadest context.

Braybrooke, D., and Lindblom, C.E. 1963. *A strategy of decision: Policy evaluation as a social process*. New York: Free Press.

The strategy of disjointed incrementalism is presented in this volume as the method of policy analysis most often used by those who work in the fields of policy evaluation and decision-making.

Fincher, C. 1987. Policy analysis and institutional research. In *Key resources on higher education governance, management and leadership*, M.W. Peterson and L.A. Mets, eds. San Francisco: Jossey-Bass.

Provides a brief description of the use of policy analysis and institutional research at educational institutions. Includes an excellent bibliography, including some of the citations below, of references related to policy as a unifying concept in institutional management and governance.

Firnberg, J.W., and Lasher, W.F., eds. 1980. *The politics and pragmatics of institutional research*. New Directions for Institutional Research, no. 38. San Francisco: Jossey-Bass.

The obvious influence of politics on public and institutional policy is the focus of this volume. The book makes clear that policymaking at federal, state, and institutional levels is affected by the competing objectives of participants in the process, the decision styles of the administrators and policymakers, and the nature and comparability of the data and information used.

Frances, C. 1980. Influence of federal programs. In *Improving academic management: A handbook of planning and institutional research*, P. Jedamus, M.W. Peterson, and Associates, eds. San Francisco: Jossey-Bass.

This chapter provides an excellent summary of the federal legislation influencing higher education since 1787. The evolving role of the federal government is considered, and the impact of federal support and regulation on American colleges and universities is discussed.

Quade, E.S. 1975. *Analysis for public decisions*. American Elsevier. A Rand Corporation research study.

This is a very practical book on conducting policy analysis. The discussion of analysis techniques is not limited to quantifiable approaches, but includes, in fact emphasizes, the importance of judgement, intuition, and political realities in providing meaningful analysis for the public policymaker. The components of good analysis are presented clearly.

Wildavsky, A. 1979. *Speaking truth to power: The art and craft of policy analysis*. Boston: Little, Brown and Co.

In this volume (chapter 1 is of special interest), policy is viewed as both a process and a product. As a process, policy is concerned with what is and what ought to be. It is a reordering of priorities in an attempt to serve the public interest.

This second series of listings include examples of the application of policy analysis to problems in higher education. While this is by no means an exhaustive list, it contains some outstanding recent examples of key issues in policy analysis.

Bowen, H.R., and Schuster, J.H. 1986. *American professors: A national resource imperiled.* New York: Oxford University Press.

This book examines the impact of recent upheavals in higher education on the American professoriate. Focusing on such factors as declining enrollment, declining government support, and massive shifts in enrollment among academic disciplines, the authors conclude that academia are an imperiled profession.

Hansen, W.L., and Stampen, J.O. 1989. The financial squeeze on higher education institutions and students: Balancing quality and access in the financing of higher education. *Journal of Education Finance* 15:3-20.

Hansen, W.L., and Stampen, J.O. 1991. Quality, access and financial pressures on higher education institutions and students. In *Quality and access in higher education: Comparing Britain and the United States,* R.O. Berdahl, I. Spitzberg, and I. Moodie, eds., 42-57. Society for Research into Higher Education, Open University Press.

This study attempts to illuminate recent discussions about the increased financial pressures experienced by students, their parents, and colleges and universities in paying for the costs of higher education in the United States. It does this by placing these developments in the context of long-run pendulum-like swings in society's interest in promoting greater access to and enhancing the quality of higher education. These swings are made apparent by a new approach to organizing and analyzing data.

Hauptman, A.M., with Meriosotis, J.M. 1990. *The college tuition spiral.* Washington, DC: American Council on Education.

In the 1980s, the price of a college education became a sensitive issue for policy-makers, educators, parents, and students. In response, ACE and the College Board asked Arthur Hauptman, an expert on financing higher education, to undertake a study. Distinctly different reasons and patterns emerge for the public and private sector of higher education. The report also speculates that a major factor behind the price spiral in both sectors has been the decline in the traditional college-age group in the 1980s and the effect this demographic trend has had on enrollment trends, the costs of recruiting and retention, and the supply and demand for college graduates.

Hoenack, S.A., and Collins, E.L., eds. 1990. *The economics of American universities: Management, operations and fiscal environment.* Albany, NY: State University of New York Press.

This book discusses the adjustment of universities to the changing fiscal environment. Its authors analyze the relationship between higher education inputs and outputs, assess the available information about the determinants of university costs, survey the influence of market conditions and pricing strategies on students' demands for attendance at institutions of higher education, summarize research on objectives for institutions of higher education helped by different participants and funders, analyze how universities determine their priorities and relative funding for different activities and disciplines, and explore the economics of universities' research functions.

Leslie, L.L., and Brinkman, P.T. 1988. *The value of higher education.* New York: Macmillan.

This book concerns private policy, as it relates to investing in higher education by private individuals and less directly by these individuals and their families. It concerns also public policy, first regarding the public or social investment in higher education, then regarding the degree to which contemporary higher education financing schemes serve the emergent social goals of promoting social equity and opportunity.

Massey, W.F., and Zemsky, R. 1990. *The dynamics of academic productivity.* Denver, CO: State Higher Education Executive Officers Association.

Policy Perspectives. 1990. *The lattice and the ratchet.* The Pew Higher Education Research Program Sponsored by the Pew Charitable Trusts. Philadelphia.

To understand the dynamics which led to declining productivity in higher education, Massey and Zemsky provide a powerful explanation of why and how costs are increasing and what we are getting in return. In terms of outputs of academic departments, the "gainers" have been curriculum specialization and unsponsored research activity; the losers, structure in the curriculum and the quality of undergraduate teaching.

Volkwein, J.F. 1987. State regulation and campus autonomy. *Higher Education: Handbook of Theory and Research* 3:120-154.

Volkwein, J.F. 1989. Changes in quality among public universities. *Journal of Higher Education* 60:136-151.

At a time when decentralization management is gaining favor in the business world, public institutions of higher education must face the issue of the extent to which organizational authority should be decentralized. In these articles, Volkwein documents differences among states and institutions in measures of campus autonomy and correlates autonomy with institutional quality measures. There is a consistently low relationship between the two, leading to the following conclusion: among public, doctoral universities, variations in measures of quality and success are most strongly associated with differences in their levels of state funding and their size and not with their autonomy.

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PREDICTIONS OF ACADEMIC PERFORMANCE

Editors: Oscar W. Larson, III and Michael W. Matier

Editors' note: After reviewing the recent literature on predicting academic performance, it became clear to us that there were two distinct types that would be of most interest to the practitioners of institutional planning and research: macro-level syntheses of the literature and more particularized analyses. The syntheses cited here are intended to familiarize the reader with the broad methodological and policy issues inherent in any discussion of academic performance and its possible antecedents or correlates. They are, in essence, "one stop shopping" in book form. The particularized analyses noted below are intended to provide the reader with a representative sample encompassing the range of specific approaches to the topic of academic performance and illustrate some of the issues that can arise when designing and executing empirical studies. These micro-level analyses are not necessarily without their limitations, but they do provide reasonable examples that institutional planners and researchers might refer to as they proceed with their own efforts in this area.

Macro-level Syntheses

Willingham, W.W., Lewis, C., Morgan, R., and Ramist, L. 1990. *Predicting college grades: An analysis of institutional trends over two decades*. Princeton: The College Board and Educational Testing Service.

Unquestionably the most ambitious and comprehensive work on the sources of variability in freshman grades as reflected in trends across time and between institutions. Jointly sponsored by the College Board and the Educational Testing Service (ETS), the primary focus of the book is on the validity of college grades and their relationship to conventional college selection criteria such as the Scholastic Aptitude Test (SAT) and the high school record. The specific substantive problem being addressed is the observed decline in the average correlation between test scores and freshman grades. A framework, presented in the first chapter, provides competing explanations for the causes of this change in predictive validity. Since the framework is patterned after the correlational model, it includes the three broad categories -- predictor (test score), criterion (freshman grades), and sample (the subpopulation of institutions conducting validity assessments) -- that could account for the reduced association between two of these measures. The remainder of the book is an extensive collection of syntheses, interrogatories, compendia, technical reports, and special analyses that examine particular aspects of its central issue.

Wilson, K.M. 1983. *A review of research on the prediction of academic performance after the freshman year*. New York: College Entrance Examination Board. ERIC Document Reproduction Service No. ED 233 076.

An overview of the literature on research into predicting performance beyond the traditional estimation of freshman year GPA by means of multiple regression. A specific purpose of the synthesis was to attempt to answer the question of whether or not admissions measures are as valid predictors of overall cumulative record or senior GPA as they are of freshman GPA. While concluding that freshman GPA is a better predictor for post-freshman GPA than admissions measures, because the best predictor of GPA at any point in time is the GPA in the immediately preceding academic term, the author asserts that admissions measures are essentially as valid for longer term predictability as they are for their traditionally used short-term predictability.

Representative Particularized Analyses

Bloom, A.M., Agard, D.B., McLaughlin, G.W., and Carson, E.W. 1988. *Anticipating mathematics performance: A cross-validation of AID3 and regression*. Paper presented at the annual forum of the Association for Institutional Research, Phoenix. ERIC Document Reproduction Service No. ED 298 851.

As part of the perpetual effort to predict student performance in specific, common required courses this research compares two prediction tools--nonlinear modeling using AID3 and linear modeling using multiple regression--with the added feature of cross-validating the results across two classes of entering freshmen. The authors found that both modelling procedures were "useful" in predicting performance, especially for those individuals who were expected to have difficulty. Nevertheless, since either model could predict no more than 30 percent of the variance in performance it is clear more "discriminating critical variables" need to be developed for use in the models.

Bridgeman, B. 1991. Essays and multiple-choice tests as predictors of college freshman GPA. *Research in Higher Education* 32(3): 319-332.

As the title suggests, this is an examination of the predictive qualities of English composition essays and multiple-choice tests. The author found that these additional measures did not incrementally add much to predicted freshman GPA based on SAT scores and high school grade point average. However, for the small cohort of black male subjects of the study, the results suggest that the essay may hold some value as an additional predictor.

Hand, C.A., and Prather, J.R. 1985. *The predictive validity of scholastic aptitude test scores for minority college students*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL. ERIC Document Reproduction Service No. ED 261 093.

Using the thirty institutions of the Georgia State College System, this research reports the results of multiple regression modeling and the resultant predictive validity of SAT scores by race and gender across institution types. The dependent variable in the regression modeling was freshmen GPA, while the independent variables were SAT-verbal, SAT-math, high school grade point average, and freshmen credit hours carried and earned. The authors affirm the incremental effectiveness of SAT scores when used to supplement high school grades in predicting freshmen performance. They additionally found that GPA was less predictable for black males than any other group using this modelling technique.

Jacobs, L.C. 1985. *Prediction procedures and normative data for freshmen*. Indiana Studies in Higher Education, Number 52. Bloomington: Bureau of Educational Studies and Testing, Indiana University. ERIC Document Reproduction Service No. ED 266 715.

A "classic" piece of institutional research in the sense that it is a regularly updated analysis on the prediction of freshmen year success. The report outlines the prediction procedures, as well as displays graphic and tabular data that both reports normative statistics and makes it possible for advisors to anticipate the likelihood of success. The authors note that for the 1983 cohort, males had higher aptitude test scores while females had higher freshman year grades.

Kanoy, K.W., Westin, J., and Latta, M. 1989. Predicting college success of freshmen using traditional, cognitive and psychological measures. *Journal of Research and Development in Education* 22(3): 65-70.

In addition to following typical predictive modelling procedures, the authors utilized three instruments that measure psychological constructs which were in turn employed in regression modelling: the Multidimensional-Multiattributional Causality Scale; the Learning Context Questionnaire and the Academic Self-Concept Scale. This article suggests that for certain groups of students, SAT scores are limited in their predictive ability. In particular, the authors found that though SAT scores, high school GPA and academic self-concept combined to produce the best predictive model for students who were expected to do well, for students anticipated to have difficulty, two psychological variables--internal locus of control for achievement success and amount of effort put into work--combined to account for 46 percent of the variance in freshmen GPA. The study

is limited in its generalizability in that it was conducted on a limited number of students at an all female two-year liberal arts college, but it nevertheless outlines alternative predictive procedures that may better explain the probability of success for an important part of an institution's admission cohort.

Sedlacek, W.E., and Adams-Gaston, J. 1989. *Predicting the academic success of student-athletes using SAT and noncognitive variables*. Research Report #20-89. College Park: University of Maryland. ERIC Document Reproduction Service No. ED 314 501.

Reports the findings of a survey of incoming freshman athletes using the Non-cognitive Questionnaire (NCQ). Found that three of the eight NCQ scales (Support Person, Community and Self-Concept) combined in multiple regression to explain 45 percent of the variance in first semester grade point average, while SAT-M and SAT-V have virtually no correlation with grades. Suggests that predicting success by way of noncognitive variables is a more useful procedure for non-traditional students, and particularly student-athletes. A flaw in the study was that there was no "control group" of non-athletes included in the analysis.

Walter, T.L., Smith, D.E.P., Hoey, G., Wilhelm, R., and Miller, S.D. 1987.-Predicting the success of college athletes. *Research Quarterly for Exercise and Sport* 58(3): 273-79.

A retrospective look at the potential effects of NCAA Bylaw 5-1-(J). Using scholarship athletes admitted to the University of Michigan from fall 1974 through fall 1983, the authors were able to determine that using the NCAA required combined SAT score of 700, fully 60 percent of the black athletes (86 percent of whom actually succeeded) would not have been admitted to the university over this period. For non-black athletes, 18 percent would not have been admitted even though 70 percent eventually earned degrees. The authors suggest that for high school athletes, the best predictor of academic performance is the high school grade point average, and that its predictive abilities are not improved by adding aptitude measures.

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RETENTION AND ENROLLMENT MANAGEMENT

Editor: Peter T. Ewell

Overview: The past decade has seen considerable evolution in the topic of enrollment management--both substantively and technically. While predicted downturns in higher education enrollments forecast for the early eighties in most cases did not occur, most institutions have felt increased pressure to recruit and retain students. At the same time, those attending college are more diverse, complicating the process of researching the dynamics of enrollment. Finally, developments in computing technology have allowed far greater sophistication in databases and analyses to support enrollment management functions. All of these have had an impact on the enrollment management literature.

Currently, the available literature can be categorized under four headings--general enrollment management, recruitment and marketing, retention, and technical/database issues. While the first and last are integrative and relatively new, resulting in relatively few relevant entries, the literature on the established topics of recruitment and retention is substantial. This bibliography, therefore, only attempts to present its highlights for the institutional researcher as a guide to further study.

Comprehensive Overviews of Enrollment Management

Hossler, D. 1984. *Enrollment management: An integrated approach.* New York: College Entrance Examination Board.

Provides a concise conceptual overview of enrollment management, integrating the functions of recruitment, marketing, tuition and financial aid policy, and retention. A good first book on the topic.

Hossler, D. 1986. *Creating effective enrollment management systems.* New York: College Entrance Examination Board.

Extends the basic framework for enrollment management program development by providing a range of organizational change strategies. Contains four case studies of application.

Hossler, D., ed. 1986. *Managing college enrollments.* New Directions for Higher Education, no. 53. San Francisco: Jossey-Bass.

Articles briefly cover a variety of enrollment management topics including marketing, pricing, attrition/retention, and the design of effective institutional programs. A good initial overview of the topic.

Hossler, D., ed. 1991. *Evaluating student recruitment and retention programs*. New Directions for Institutional Research, no. 70. San Francisco: Jossey-Bass.

Hossler, D., Bean, J.P., and Associates. 1990. *The strategic management of college enrollments*. San Francisco: Jossey-Bass.

An edited collection of related articles containing separate sections on marketing, retention, and program coordination at different kinds of institutions.

Kemerer, F.R., Baldridge, J.V., and Green, K.C. 1982. *Strategies for effective enrollment management*. Washington, DC: American Association of State Colleges and Universities.

Provides a comprehensive guide to processes that affect enrollment with implications for campus action; based on the results of a multi-campus demonstration project.

Recruitment, Marketing, and Pricing

College Entrance Examination Board. (annual). *National college-bound seniors*.

Describes the summary characteristics of graduating high school seniors completing the SAT examination. Data are useful for enrollment planning and forecasting.

Fenske, R.H., ed. 1989. *Studying the impact of financial aid on institutions*. New Directions for Institutional Research, no. 62. San Francisco: Jossey-Bass.

Lay, R.S., and Endo, J.J., eds. 1987. *Designing and using market research*. New Directions for Institutional Research, no. 54. San Francisco: Jossey-Bass.

Articles included cover market segmentation, environmental analysis, analysis of pricing, and investigating institutional image. Contains a useful bibliography of market concepts applied to higher education.

Litten, L.H., Sullivan, D.S., and Brodigan, D.L. 1983. *Applying market research in college admissions*. New York: College Entrance Examination Board.

An excellent introduction to the application of basic marketing principles to college recruitment, including market segmentation and expansion markets; provides a good guide for conducting a campus market study.

Lucas, J.A., ed. 1979. *Developing a total marketing plan*. New Directions for Institutional Research, no. 21. San Francisco: Jossey-Bass.

Though dated, a good overview of how classic marketing principles can be applied; contains chapters illustrating uses in both universities and community colleges.

Topor, R. 1983. *Marketing higher education: A practical guide*. Washington, DC: Council for the Advancement and Support of Higher Education.

Describes application of marketing techniques to college recruitment, particularly in the private college sector. Describes methods for conducting effective marketing research studies.

Western Interstate Commission on Higher Education, and The College Board. 1991. *The road to college: Educational progress by race and ethnicity*.

Provides historical and projected elementary and secondary enrollment and graduation data for each of the fifty states in paper and diskette form; an excellent base data resource for recruitment planning.

Wilms, W.W., and Moore, R.W., eds. 1987. *Marketing strategies for changing times*. New Directions for Community Colleges, no. 60. San Francisco: Jossey-Bass.

Collection of articles on the application of marketing principles to two-year colleges. Contains articles on building relations to employers, performance contracting, area market assessment, and various case studies.

Zemsky, R., and Oedel, P. 1983. *The structure of college choice*. New York: College Entrance Examination Board.

Excellent report on how students choose which college to attend using College Board records for the northeast; the data are dated, but the method provides an excellent and still applicable model for campus practice.

Student Retention

Astin, A.W. 1975. *Preventing students from dropping out*. San Francisco: Jossey-Bass. A classic report. Based on the Cooperative Institutional Research Program (CIRP) database and therefore particularly applicable to traditional student populations. Notes primary predictors of student persistence and possible implications for intervention strategies.

Beal, P.E., and Noel, L. 1980. *What works in student retention*. Iowa City: The American College Testing Program.

Dated, but still a good short review of effective practices. Based on the results of a national survey of institutional retention programs and their effectiveness.

Bean, J.P. and Metzner, B.S. 1985. A conceptual model of nontraditional student attrition. *Review of Educational Research*, 55 (4): 485-540.

Provides a useful conceptual model of attrition for application to nontraditional students. Later validated by the same authors in 1987.

Lenning, O.T., Beal, P.E., and Sauer, K. 1980. *Retention and attrition: Evidence for action and research*. Boulder, CO: National Center for Higher Education Management Systems.

Basic summary of research findings on retention and their implications for programming. Now somewhat dated, but a good introduction to the topic and the issues.

Noel, L., Levitz, R., Saluri, D., and Associates. 1985. *Increasing student retention: Effective programs and practices for reducing the dropout rate*. San Francisco: Jossey-Bass.

Edited collection of diverse articles on student retention with particular emphasis on practical applications and workable programs. Includes a thorough review of the possible contributions of different campus offices and functions and a set of applied case studies.

Pascarella, E.T., ed. 1982. *Studying student attrition.* New Directions for Institutional Research, no. 36. San Francisco: Jossey-Bass.

Contains diverse articles and case studies on researching attrition at the institutional level. Though a bit dated, particularly strong on research design and variable selection for conducting institutional dropout studies.

Pascarella, E.T., and Terenzini, P.T. 1991. *How college affects students: Findings and insights from twenty years of research.* San Francisco: Jossey-Bass.

Chapter 9 provides a comprehensive (but not exhaustive) review of the past twenty years of research on student persistence and educational attainment.

Tinto, V. 1987. *Leaving college: Rethinking the causes and cures of student attrition.* Chicago: University of Chicago Press.

Major theoretical synthesis of how and why student attrition occurs. Its core model, based on "academic" and "social" integration, has been used extensively (and generally validated) in designing both academic and institutional dropout studies over the past two decades.

Upcraft, M.L., Gardner, J.N., and Associates. 1989. *The freshman year experience.* San Francisco: Jossey-Bass.

Comprehensive review of research findings and effective intervention approaches for first-year students. An excellent introduction.

Technical/Data Base Issues

Bers, T.H., ed. 1989. *Using student tracking systems effectively.* New Directions for Community Colleges, no. 66. San Francisco: Jossey-Bass.

Collection of articles on the construction and use of longitudinal databases in a two-year college setting. Includes consideration of nontraditional and special-needs populations, and the use of tracking to evaluate the success of student placement and remediation.

Ewell, P.T. 1987. Principles of longitudinal enrollment analysis: Conducting retention and student flow studies. In *A primer on institutional research*, ed. J.A. Muffo and G.W. McLaughlin. Tallahassee, FL: Association for Institutional Research.

Provides a conceptual foundation for longitudinal cohort-based database design and a framework for conducting retention studies using such data.

Ewell, P.T., Parker, R., and Jones, D.P. 1988. *Establishing a longitudinal student tracking system: An implementation handbook*. Boulder, CO: National Center for Higher Education Management Systems.

Provides a basic guide for developing a longitudinal student database at the institutional level to support enrollment management research and decision-making. Contains suggested data contents, analytic procedures, and reporting formats. Based on a major multi-institutional project involving fifty community colleges.

Wing, P. 1974. *Higher education enrollment forecasting: A manual for state-level agencies*. Boulder, CO: National Center for Higher Education Management Systems.

Though dated, still the classic reference on enrollment projection methods and models.

Emerging Issues:

Primary emerging issues in the area of enrollment management of relevance to the institutional research community include the following:

- new federal and state reporting requirements on student retention and degree completion (e.g., "Student Right-to-Know"); these are emerging in far greater quantity and will have a major impact on institutional research activities.

- retention and enrollment management issues for minority and non-traditional students; most of the extant literature deals with traditionally-aged college students, while emerging trends indicate that students enrolling in the coming decade will be increasingly non-traditional.

- pricing and elasticity of demand; pricing has become more competitive and student matriculation decisions more uncertain, resulting in a rising requirement for better information about the effect of pricing on the decision to attend a particular institution.

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STATISTICS

Editors: Kristi Griffiths and Gerald W. McLaughlin

Books and Chapters

Applied Social Research Method Series. Newbury Park, CA: Sage Publications.

This series describes the major methods used in the social sciences. Each introduces the topic and follows step-by-step procedures in explaining the techniques.

Dillon, W.R., and Goldstein, M. 1984. *Multivariate analysis methods and applications*. New York: Wiley and Sons.

This book is an in-depth guide to multivariate methods. Employing a minimum of mathematical theory, it uses real data from a wide range of disciplines to illustrate not only ideas and applications, but also the subtleties of these methods.

Draper, N.R., and Smith, H. 1981. *Applied regression analysis*, 2d edition. New York: Wiley and Sons.

This very complete, though technical, treatment of regression is presented from the matrix, host squares, and graphic perspectives. Topics include simple, multiple, and step-wise regression. Models for ANOVA designs are presented.

Everitt, B. 1974. *Cluster analysis*. London: Heinemann Educational Books.

This is a basic discussion of the use of cluster analysis. Included is a discussion of different major techniques along with a discussion of the major issues in cluster analysis and the major problems for major techniques. Equations and an extensive bibliography are included.

Hengstler, D.D., and McLaughlin, G.W. 1985. Statistical issues and concerns in court cases. In *The use of data in discrimination issues cases*, W. Rosenthal and B.D. Yancey, eds. New Directions for Institutional Research, no. 48, 12(4): 65-82. San Francisco: Jossey-Bass.

Statistics have been accepted by courts as establishing salary differences or equity. Multiple regression is discussed as an appropriate tool, as well as assumptions, variable selection, and sample bias. A two-stage model with residual analyses is presented.

Hinkle, D.E., Wiersma, W., and Jurs, S.G. 1979. *Applied statistics for the behavioral sciences*. Chicago: Rand McNally College Publishing Company.

This basic statistics text covers techniques for hypothesis testing and univariate statistics and includes discussions and examples of standard scores, t-tests, correlations, ANOVA, and linear regression. Some nonparametric techniques are also presented.

Hoaglin, D.C., Mosteller, F., and Tukey, J.W., eds. 1985. *Exploring data tables, funds, and shapes*. New York: Wiley and Sons. 1983.

Understanding robust and exploratory data analyses. New York: Wiley and Sons.

A two-volume set of discussions which define non-parametric descriptive analytical techniques. These techniques offer alternatives to restrict parametric procedures for simple graphics through regression models.

Huiteman, B.E. 1980. *The analysis of covariance and alternatives*. New York: Wiley and Sons.

A full coverage of covariance including a graphical presentation. Includes examples of ANOVA and analysis of covariance using regression techniques. The second part deals with advanced topics including multivariate techniques and nonlinear techniques.

Kirk, R.E. 1982. *Experimental design*, 2d ed. Monterey, CA: Brooks/Cole Publishing Company.

This second edition was written to serve both as a text and as a reference book for students and researchers in the behavioral sciences and education. In-depth coverage is provided for recent developments in statistics, such as new multiple comparison procedures, the circularity assumptions associated with block designs, the partition of interactions into interpretable contrast-contrast interactions, and the analysis of factorial designs with unequal sample sizes and missing observations.

Myers, R.H. 1980. *Classical and modern regression with application*. Boston: Duxbury Press.

A very thorough coverage of the basic regression model covering the problems of selecting the best model and multicollinearity. Residual analysis is discussed along with the use of influence diagnostics to determine the influence of specific data points.

Pedhazur, E.J. 1982. *Multiple regression in behavioral research: Explanations and prediction*, 2d ed. New York: Holt, Rinehart, & Winston.

Sage University Paper Series on Quantitative Applications in the Social Sciences. Newbury Park, CA: Sage Publications.

"This series of methodological works provides introductory explanations and demonstrations of various data analysis techniques applicable to the social sciences. Designed for readers with a limited background in statistics or mathematics, this series aims to make the assumptions and practices of quantitative analysis more readily available."

Noether, G.E. 1991. *Introduction to statistics: The nonparametric way*. New York: Springer-Verlag.

A good beginner-level text.

Tatsuoska, M.M. 1971. *Multivariate analysis: Techniques for educational and psychological research*. New York: Wiley and Sons.

A discussion of the basic multivariate techniques. This books shows the applications of techniques along with their derivatives. Numerous examples with computations are provided. Multivariate analysis of variance and covariance, discriminant analysis, covariate correlation, and classification analysis are included.

Yancey, B.D., ed. 1988. *Applying statistics in institutional research*. New Directions for Institutional Research, no. 58, 15(2). San Francisco: Jossey-Bass.

Includes chapters on the classical Fisher paradigm, comparing groups using continuous data, using log-linear models in higher education research, applying regression analysis to problems in institutional research, causal modeling for institutional researchers, forecasting methods for institutional research, and exploratory data analyses for institutional researchers.

Yancey, B.D., and Ruddock, M.S. 1987. Using statistical packages/spreadsheets. In *A primer on institutional research*, J.A. Muffo and G.W. McLaughlin, eds., 113-131. Tallahassee, FL: Association for Institutional Research.

Criteria are presented for evaluating statistical packages and spreadsheets, emphasizing that the specific requirement of the job be understood. Specific packages are described for both the mainframe and the PC.

Methodologies from Research in Higher Education

Ransom, M.R. 1990. Gender segregation by field in higher education. *Research in Higher Education* 31(5): 477-491. New York: Agathon Press.

Females by year and discipline are plotted in a segregation curve. Indices of segregation are computed. Chi-square tests are used. Graphs are presented.

Statistics Canada. Ottawa, Canada: Education, Culture, and Tourism Division.

This Canadian publication offers a wide range of education studies.

Szady, S.M. 1988. Alumni data analysis. In G.S. Melchiori, ed. New Directions for Institutional Research 60(15): 39-50. San Francisco: Jossey-Bass.

SEARCH, an interactive algorithm in OSIRIS-IV, is described. This procedure selects subgroups to give the best explanation with a binary-split tree.

Wakstein, J. 1987. Identifying market segments. In R.S. Lay, and J.J. Endo, eds. New Directions for Institutional Research 54(14): 91-101. San Francisco: Jossey-Bass.

The chi square automatic interaction detector (CHAID) is described and demonstrated. The procedure segments a group into subgroups to achieve variance between subgroups.

Software for the Personal Computer

Short summaries of some of the computer software available for use on personal computers are advertised in *The American Statistician*, a magazine of the American Statistical Association. In the section entitled "New Developments in Statistical Computing," the following announcements are published:

1. new computer software and updates;
2. new computing products that may be of assistance to statisticians;
3. selected committee reports dealing with statistical computing; and
4. brief notices of sources for further information.

Authors, producers, or distributors wishing to have such materials announced are invited to submit information according to the style guidelines published in the February 1986 issue of *The American Statistician*. The date ( ) on the following reviews is the date of *The American Statistician* publication. Space constraints prevent the inclusion of full reference information in the following.

for the PC/DOS (with some UNIX/Macintosh ability)

BLSS has data manipulation capabilities and specialized statistical procedures. It performs basic analyses, fitting procedures, time series, and nonparametric analysis. It should be used in conjunction with general purpose programs. (May 1991)

dBase Stats offers descriptive statistics, t tests, multiple regression, three-way cross tabulations, and limited ANOVA capabilities. The program can be used in either menu mode or in command mode. dBase Stats has no data entry or edit capability. An outside program must be implemented. (November 1991)

Dual3 can analyze six different types of categorical data: contingency tables and frequency data, multiple-choice data, paired comparison data, rank-order data, successive categories data, and sorting data. (November 1991)

EQS 3.0 and LISREL 7.16 estimate structural equation models. Both provide parameter estimates, estimated asymptotic standard errors, and test statistics for overall model fit. Each can take raw data, covariance matrices, or correlation matrices as input. Both decompose effects into direct, indirect, and total effects. EQS uses scalar notation for programming while LISREL uses a matrix notation. (February 1991)

GENSTAT 5 is a very general statistical package, including FORTRAN subroutines. The program can accommodate: ANOVA, regression, generalized linear models, time series, multivariate analysis, and others. (November 1991)

MAPWISE performs simple or multiple correspondence analysis for large data sets; up to a 100 row/100 column data matrix. The program is menu-driven and interactive. The editing key functions are similar to those of WordStar. (November 1991)

MicrOsiris has a command interpreter and subprogram overlays for each function. Input and output are through standard OSIRIS files. Available statistics include regression, multiple classification analysis, ANOVA, factor analysis, partial correlations, contingency tables and associated measures of relationship, and hierarchical clustering. (August 1990)

MINITAB is a general purpose data analysis system. It can be used for organizing, analyzing, and reporting statistical data, offering a wide variety of functions such as data plots, basic statistics, regression, ANOVA, MANOVA, EDA, nonparametric procedures, and matrix capabilities. MINITAB Reference Manual (April 1989).

PC-MDS contains a set of 21 programs for multivariate data analysis. Two batch, menu-driven programs, CORAN and CORRESP, perform correspondence analysis. CORAN is able to accommodate data sets of size 2,000. (November 1991)

SCA is a general purpose statistical package for mainframe, mini, and microcomputers offering univariate time series modeling and forecasting capabilities. It contains procedures for time series editing and simulation, model identification, model specification and estimation, diagnostic checking, outlier identification, and forecasting. (February 1989)

SimCA is a program for running simple correspondence analysis and multiple correspondence analysis provided that the data set is not too large. The program is both interactive and batch. SimCA can analyze up to 175 active columns and a virtually unlimited number of rows. (November 1991)

StatXact is a software package for nonparametric statistical inference. It contains procedures for three types of problems: two-sample linear rank tests, tests for two-way contingency tables, and estimation of the common odds ratio for stratified 2x2 tables. It should supplement a larger package, for use on small data sets. (May 1991)

TIMESLAB contains about 150 commands performing operations such as inputting data, estimating model parameters, and plotting. Many graphic commands are available, and a text editor is built-in. (August 1991)

y-STAT is a statistical analysis and forecasting package in spreadsheet format. Statistical procedures consist of simple descriptive statistics, frequencies, correlation matrix, cross-tabulation tests of independence, difference of means tests, and one-way and two-way ANOVA. Several nonparametric tests are also included. (February 1990)

<u>for the Macintosh</u>

Data Desk is a data exploration and analysis package, including linear models. The package offers correlation, regression, ANOVA, Pearson and Spearman correlations and Kendell's tau, covariances, Cook's distance, DFFits, partial regression plots, weighted regressions, polynomial regression with derived variables. (November 1991)

DBMS/COPY is not a statistical package, but is a bridge between packaggs. The purpose of DBMS/COPY is to copy a system file of one package to a system file of a second package. Over 65 packages are supported, including most popular spreadsheet, database, and statistical packages. (February 1992)

Exstatix provides descriptive and inferential statistics, as well as quick summaries of variables, including mean and standard deviation. The program performs most of the standard analyses: correlation analysis, multiple regression, nonparametric tests, and ANOVA. (November 1991)

Fastat offers a wide variety of analytic methods, with a strength in graphics. For time series analysis, the program can produce full and partial autocorrelation plots. Each analytic procedure includes optional diagnostics to aid in the analysis.
(November 1991)

JMP offers several functions: histograms, boxplots, other graphical procedures, crossed, nested, interactions, polynomial, and response surface GLM univariate specifications. JMP also has many features similar to the SAS procedures: Print, Freq, Univariate, Corr, GChart, GPlot, Means, TTest, Logist, Sort, and univariate GLM/ANOVA/Reg/RS Reg. (November 1991)

StatView II offers basic statistical analyses as well as linear models analysis. The program is able to run correlation, regression, and ANOVA options, balanced and unbalanced designs without covariates. However, StatView II is not able to accommodate contrasts, post hoc tests, or regression diagnostics. SuperANOVA, the companion package for StatView II, is a general purpose multivariate linear models package. The program accommodates covariates, no-intercept models, nesting, univariate and multivariate repeated measures, unbalanced designs, and missing-cell designs. (November 1991)

Systat offers a variety of analytic options, including descriptive statistics, linear models, non-parametric procedures, nonlinear model fitting, multidimensional scaling, time series analysis, clustering, log-linear models, and a related graphics program--Sysgraph. (November 1987)

<u>programs for the main-frame</u>

Inquire about the availability of programs at your institution. If the program is being used on the institution's mainframe, manuals can be found locally.

BMDP BIOMEDICAL COMPUTER PROGRAMS P-series 1977: aids data analysis by providing methods ranging from simple data display and description to advanced statistical techniques. Procedures include plots and histograms, linear and nonlinear regression, ANOVA and ANCOVA, nonparametric analysis, cluster analysis, multivariate analysis, and others.

SAS has the ability to perform data exploration with SAS/INSIGHT software - a highly interactive statistical graphics module, analyze survival data with the new PHREG procedure for COX regression, and design and analyze standard experiments with the Automated Design of Experiments (ADX) Menu System. Recent additions include procedures for path analysis, structural equations, logistic regression, correspondence analysis, and Pareto charts, as well as menu systems for project management and statistical quality control.

SPSS is a package that provides a spectrum of statistical power, from the simple to the highly complex: data tabulation procedures such as frequency and cross-tabulation tables; simple statistical procedures such as descriptive statistics, correlation and t-tests; advanced statistical procedures such as ANOVA, regression, factor analysis and discriminant analysis; and more specialized functions such as time series procedures, perceptual mapping techniques (including conjoint and correspondence analysis) and LISREL models.

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THEORY AND APPLICATIONS OF INSTITUTIONAL RESEARCH

Editors: Marvin W. Peterson, Lisa A. Mets, and Linda S. Vega

This chapter is divided into four conceptual categories. An explanation of each section follows its heading.

Theory, Role and Evolution of Institutional Research

Entries in this section broadly address the theory, role and evolution of institutional research. Included among the entries are annotations of: handbooks, guidebooks and manuals describing the functions of institutional research; discussions of theories of organizations and decision making and their relevance to institutional research; and reviews of the historical development of the institutional research profession.

Clagett, C.A., and Huntington, R.B. 1990. *The institutional research practitioner: A guidebook to effective performance*. Silver Spring, MD: Red Inc. Publications. (Available from Craig A. Clagett, Director, Inst. Research & Analysis, Prince George's Community College, 301 Largo Road, K-231, Largo, MD 20772.)

This was written by a psychologist and a political scientist who learned institutional research on the job. Contents include definitions of institutional research, useful tools for institutional research, techniques for the effective presentation of research findings, tips for maximizing office productivity, and ideas for increasing institutional research staffing. This is a handy guidebook for those new to the institutional research field and for those who are looking for ways to increase the effectiveness of their offices.

Dressel, P., and Associates. 1971. *Institutional research in the university: A handbook*. San Francisco: Jossey-Bass.

This is one of the first handbooks to serve as a reference for what an institutional research office is, how one may be established, and what its functions should be. Topics include the role institutional research plays in: collecting and utilizing basic data; studying the environment; studying teaching and learning; evaluating outcomes of instruction; the development and use of information systems; total resources accounting, mathematical simulation, and program budgeting; and long-range planning. This collection contains insights still relevant today for those planning institutional research offices and those using the services of an institutional research office.

Firnberg, J.W., and Lasher, W.F., eds. 1983. *The politics and pragmatics of institutional research.* New Directions for Institutional Research, no. 38. San Francisco: Jossey-Bass.

This edited monograph explores the interrelationships between institutional research and higher education politics. Authors approach this subject by providing two general discussions about the nature of institutional research and information followed by more specific treatments of politics at various levels within the organizational hierarchy of higher education. The issue concludes with a discussion of the future for higher education and recommends that the institutional researcher pay special attention to the planning function. Novice institutional researchers and those with expanding functions will find this useful as an introduction to the political terrain of institutional research.

Hearn, J.C., and Corcoran, M.E. 1988. An exploration of factors behind the proliferation of the institutional research enterprise. *Journal of Higher Education* 59 (6): 634-51.

Derived from theories of power, information, and change in organizations, the article provides encouraging insight for institutional researchers working in environments where there is a proliferation of the institutional research enterprise outside the institutional research office.

Jedamus, P., Peterson, M.W., and Associates. 1989. *Improving academic management: A handbook of planning and institutional research* (2d printing). San Francisco: Jossey-Bass.

In this comprehensive guide to planning and institutional research, chapter authors, noted practitioners and scholars in the field, go beyond description of current methods and practices to offer institutions recommendations for coping with an increasingly complex future. Now in its second printing, this book continues to serve as a useful tool for institutional researchers, planners, and others dedicated to improving the academic management of their institutions.

Neave, G. 1989. Foundation or roof? The quantitative, structural and institutional dimensions in the study of higher education. *European Journal of Education* 24 (3): 211-22.

This descriptive article chronicles the emergence of interest in the quantitative, structural, and administrative aspects of higher education as a field of study. Comparisons are also made in the ways the institutional research field developed in the United States and Western Europe. This article will be of special interest to those engaged in international/comparative education.

Norris, D.M., and Mims, R.S. 1984. A new maturity for institutional planning and information management. *Journal of Higher Education* 55: 700-718.

This article analyzes decision support systems with a purpose to outline the role of institutional planning, analysis, and information management to help institutions move toward a more effective operational level. Findings suggest that those decision support systems that combine computing technology with knowledge about decision-making hold the most promise for the future. Institutional researchers playing a broad support role in institutional decision-making will find the concepts in this article helpful.

Peterson, M.W. 1985. Emerging developments in postsecondary organization theory and research: Fragmentation or integration? *Educational Researcher* 14(3): 5-12.

This article reflects on major developments in organization theory and research in higher education. The author identifies dilemmas in theory development, research methods, the context of organizational behavior, and relating theory to practice. Novice and experienced institutional researchers will find this article useful for understanding the context in which institutional research offices function.

Peterson, M.W., and Corcoran, M.E., eds. 1985. *Institutional research in transition.* New Directions for Institutional Research, no. 46. San Francisco: Jossey-Bass.

Chapter authors discuss: an evolutionary perspective of institutional research; the art and science of institutional research; changing governance and management strategies; and advances in decision support technology. The issue editors call for a proactive, transformational leadership strategy for the Association to give attention to the development of the profession, not just to the professional development of AIR's members. Both the historical perspective and state-of-the-art of the profession of institutional research will be of interest to practitioners.

Saupe, J.L. 1990. *The functions of institutional research* (2d ed.). Tallahassee, FL: Association for Institutional Research.

This 17-page monograph is addressed to those beginning work in institutional research, to executive officers and others considering the role of the activity in their institutions, and to students of postsecondary education. The author provides a description of the nature of institutional research, its role in institutional governance, and the contributions it can make to the functioning of postsecondary institutions. This monograph provides a succinct introduction to institutional research that can be easily understood by those outside the profession.

Stecklein, J.E. 1970. Institutional research. In *Handbook of college and university administration*, ed. A.S. Knowles, vol. 1: 4-123 to 4-135. New York: McGraw-Hill.

This chapter provides a good overview of the field. The author reviews: the history of institutional research; the functions of an institutional research office; the organization and administration of institutional research; and the operational field for institutional research. Also mentioned are neglected areas of institutional research studies (many of which are being addressed today). This is valuable for both novice and experienced institutional researchers in setting up or expanding the functions of institutional research offices.

Whiteley, M.A., Porter, J.D, and Fenske, R.H. eds. 1992. *A primer on institutional research*. Tallahassee, FL: Association for Institutional Research.

This Primer succeeds AIR's first primer by Muffo and McLaughlin (1987). Designed as a cookbook/manual for institutional research, this edition addresses topics that illustrate the wide range of subjects and methods institutional researchers will deal with during the next few years. Eleven noted authors in the field describe the state-of-the-art in the following areas of institutional research: persistence, enrollment management, student impacts, faculty demand, faculty salaries, peer institutions, diversity, environmental scanning, total quality management, academic program review, and cost analysis. Those new to the field of institutional research will find this volume particularly helpful.

Organization, Training and Career Development

Entries in this section describe how an institutional research office might be structured within an institution and what the functions of an institutional research officer are. Also included are entries discussing the professional development and career paths of institutional researchers.

Fenstemacher, W.P. 1982. *The institutional research director: Professional development and career path*. AIR Professional File, no. 13. Tallahassee, FL: Association for Institutional Research.

This article reports the findings from a study to determine how institutional researchers manage their own professional development and career paths. Three career stages for institutional researchers were identified: early-career (fewer than ten years experience); mid-career (ten to twenty years experience); and late-career (more than twenty years experience). Institutional researchers looking for ways to improve themselves will find this discussion helpful.

Johnson, M.D. 1982. *Career development in institutional research.* AIR Professional File, no. 12. Tallahassee, FL: Association for Institutional Research.

This paper provides basic insights into career development in institutional research based on the results of a survey of institutional research practitioners. One notable finding suggests that as one progresses in his/her career, general skills (such as interpersonal, writing, and management) become more important than technical skills (computer or statistical). Those considering careers in institutional research will find these results interesting.

Losak, J., ed. 1986. *Applying institutional research in decision-making.* New Directions for Community Colleges, no. 56. San Francisco: Jossey-Bass.

This volume discusses multifaceted functions of institutional researchers at two-year colleges. The authors represent a broad spectrum of expertise and describe the various functions or roles of institutional research.

MacDougall, P.R., and Friedlander, J., eds. 1990. *Models for conducting institutional research.* New Directions for Community Colleges, no. 72. San Francisco: Jossey-Bass.

This issue describes contemporary mandates for institutional effectiveness and presents a range of institutional research models designed to assist institutions to gather data on their effectiveness and to use this information for program improvement. Also included are a description of two state-mandated programs for institutional accountability and the working relationship between a state agency and the state college; and a review of the recent growth in the institutional assessment movement. This monograph is valuable for those community colleges establishing institutional research offices and for those expanding an existing institutional research office's role in policy formation and decision making.

Peterson, M.W., and Corcoran, M. 1985. Proliferation or professional integration: Transition or transformation. In *Institutional research in transition*, 99-112. New Directions for Institutional Research, no. 46. San Francisco: Jossey-Bass.

This chapter addresses three questions: What is the current state of institutional research? What are the implications for institutional research of the current environmental changes? What needs to be done if institutional research is to continue to be a viable institutional function that improves the performance of institutions of higher education? The analysis argues that the Association for Institutional Research should pay as much attention to the development of the profession of institutional research as it has to the professional development of its members.

Presley, J., ed. 1990. *Organizing effective institutional research offices*. New Directions for Institutional Research, no. 66. San Francisco: Jossey-Bass.

This issue is designed to assist both those who are establishing an institutional research function and those invigorating an existing unit. Guidelines for approaching tasks and avoiding pitfalls are provided. Chapter authors address: diversity of structures and tasks; location in the organization; nature and scope of institutional research; organizing for reporting and information resource management; appropriate computing tools; organizing for assessment and effective institutional research. Novice and experienced institutional researchers will find the discussions helpful.

Ridge, J.W. 1978. *Organizing for institutional research*. AIR Professional File, no. 1. Tallahassee, FL: Association for Institutional Research.

The author provides a description of organizing for institutional research based on three traditional functions of institutional research (institutional studies, management analyses, and periodic management information reporting); organizational models for institutional research (bureaucratic, systems, collegial, and political); and the internal organization of the institutional research office. An organizational prototype is offered. Those starting an institutional research office and those re-organizing existing offices will find the concepts in this article useful.

Rowh, M.C. 1990. Job duties of institutional researchers in Southern two-year colleges. *Community/Junior College Quarterly of Research and Practice*, 14 (1): 35-44.

This research article describes the results of a study of the duties performed by institutional researchers in Southern two-year colleges. The results of this study will be interesting to those studying career development in institutional research.

Dissemination and Utilization of Institutional Research

Entries in this section address the effective utilization and dissemination of the results of institutional research. Special emphasis is placed on methods for improving the presentation of information.

Clagett, C.A. 1990. *Interpreting and presenting data to management*. AIR Professional File, no. 36. Tallahassee, FL: Association for Institutional Research.

This article provides helpful tips on how to present research results in formats and at a level of sophistication accessible to top management. This discussion is helpful to all institutional research practitioners.

Ewell, P.T. ed. 1989. *Enhancing information use in decision making*. New Directions for Institutional Research, no. 64. San Francisco: Jossey-Bass.

The authors review what is known about information utilization on conceptual grounds and evaluate some common mechanisms for communicating information for decision makers. Pulling together the lessons on information use, the volume concludes with a summary chapter that offers four diagnostic questions institutional researchers should apply when communicating information. An aid to institutional researchers concerned with the effective communication of information.

Hackman, J.D. 1983. Seven maxims for institutional researchers: Applying cognitive theory and research. *Research in Higher Education* 18 (2): 195-208.

This paper presents seven institutional research maxims based on research and theory about how people cognitively process information. The author provides concrete examples how institutional researchers can apply these maxims to improve the collection, analysis, and presentation of information for decision-makers. This article provides helpful tips to present the results of research.

Lindquist, J. ed. 1981. *Increasing the use of institutional research*. New Directions for Institutional Research, no. 32. San Francisco: Jossey-Bass.

The purpose of this volume is to provide institutional researchers with a conceptual framework and practical strategies for getting institutional research used to improve academic practices. Institutional researchers looking for ways to ensure that their results are utilized will find this volume helpful.

Norris, D.M. 1983. *Triage and the art of institutional research*. AIR Professional File, no. 16. Tallahassee, FL: Association for Institutional Research.

In this article, the author offers institutional researchers tenets for the effective presentation of information. Ten principles are covered: (1) Adhere to the KISS principle; (2) Avoid the safety patrol syndrome; (3) Answer the question, but first, define the question; (4) Provide information according to its purpose; (5) Match your information with its recipients; (6) Beware the perils of printout worship; (7) Be the winner of the scavenger hunt award; (8) Take time to summarize; (9) Don't forget the old saying about a picture being worth 1,000 words; (10) Make time to do the job right. Based on the experiences of institutional research practitioners, the advice in this article is useful to novice and experienced practitioners alike.

Research Methods and Applications of Institutional Research

Entries in this section describe research methods and tools institutional researchers may find useful. Also included are descriptions of the methods institutional researchers have used to address topical issues in their practice. The reader should consult other chapters for methods or applications relevant to that topic which are not included here.

Attinasi, L.C. 1990-91. *Phenomenological interviewing in the conduct of institutional research: An argument and an illustration.* AIR Professional File, no. 39. Tallahassee, FL: Association for Institutional Research.

This article describes the qualitative approach of "phenomenological interviewing" to illustrate its potential for gaining knowledge about students. Included is a discussion on the limitations of quantitative approaches in institutional research. Phenomenological interviewing can serve as a model for conducting innovative alumni research.

Batson, S.W. 1985. Developing faculty data bases and institutional research studies as advanced planning mechanisms for potential litigation. *Research in Higher Education* 22(1): 19-30.

This article provides an overview of faculty cases litigated and reported at both state and federal levels during 1982. Institutional researchers are a vital part of the litigation process and need to develop integral data bases in anticipation of information needs for litigation.

Callan, P.M., ed. 1986. *Environmental scanning for strategic leadership.* New Directions for Institutional Research, no. 52. San Francisco: Jossey-Bass.

This volume discusses how institutional research can determine changes to come and is needed for decisions. Perhaps the ultimate test of planning and management in the next decade is how well institutions respond to predictable changes. As institutional research becomes more important and complex, it will contribute to more effective administrative decision-making during a time of uncertainty.

Clagett, C.A. 1988-89. A practical guide to environmental scanning: Approaches, sources, and selected techniques. *Planning for Higher Education*, 17 (2), 19-28.

This article examines the rationale for utilizing environmental scanning techniques and its relation to strategic planning. Three administrative approaches to guide the environmental scanning process are also discussed.

Crowson, R. 1987. Qualitative research methods in higher education. In *Higher Education: Handbook of theory and research*, ed. J.C. Smart, vol. 3: 1-56. New York: Agathon Press.

The chapter examines the role of qualitative research methods in the study of higher education and highlights the key issues for institutional research. Three major topics are discussed: (1) guiding principles of qualitative research; (2) methodological issues; and (3) implementation of qualitative research in higher education. The widespread interest in improving qualitative research methods offers institutional researchers an opportunity to make better use of qualitative research in policy analysis and administration.

Engleberg, I.N., and Cohen, M.C. 1989. Focus group research in the community college. *Community/Junior College Quarterly of Research and Practice*, 13(2): 101-108.

This article advocates "focus group" research as a qualitative tool well suited for community colleges and offers case studies as examples. Guidelines for utilizing focus group research are also presented.

Kuhns, E., and Martorana, S.V., eds. 1982. *Qualitative methods for institutional research*. New Directions for Institutional Research, no. 34. San Francisco: Jossey-Bass.

This volume focuses on the utilization of qualitative research methodology for institutional planning, policy formulation and decision-making. Qualitative and quantitative research applications are examined in key functional areas of institutional operations.

Melchiori, G., ed. 1988. *Alumni research: Methods and applications*. New Directions for Institutional Research, no. 60. San Francisco: Jossey-Bass.

This volume provides an overview on alumni research to highlight its importance and utility through institutional research.

Moore, L.J., and Greenwood, A.G. 1984. *Decision support systems for academic administration*. AIR Professional File, no. 18. Tallahassee, FL: Association for Institutional Research.

This article introduces institutional researchers to Decision Support Systems (DSS), discusses how DSS might help academic administrators make more effective decisions, and identifies important features. Included is a discussion of the components of a DSS (the DSS concept), a brief history of its development, an illustration of an application in university administration, and references on the subject.

Morrison, J.L., and Mecca, T.V. 1989. Managing uncertainty: Environmental analysis/ forecasting in academic planning. In *Higher education: Handbook of theory and research*, ed. J.C. Smart, vol.5: 354-390. New York: Agathon Press.

This reviews the salient literature describing the "environmental analysis/forecasting" approach for dealing with the level of uncertainty associated with strategic decisions. The chapter concludes with an examination of the issues and questions posed by the application of this model to postsecondary education. This approach can greatly enhance an institutional researcher's capacity to deal with a changing environment and is useful in identifying the "most likely" future of trends to arrive at alternative scenarios of plausible futures.

Nichols, J.O. 1990. *The role of institutional research in implementing institutional effectiveness or outcomes assessment.* AIR Professional File, no. 37. Tallahassee, FL: Association for Institutional Research.

This article discusses outcomes assessment as an opportunity for institutional researchers to move past relatively routine reporting into what can be the more creative aspects of the profession. An overview is provided of the three general contexts in which institutions implement institutional effectiveness and outcomes assessment (e.g., Alverno College Model, state mandates, accrediting efforts). Since the exact role of institutional research on a given campus is determined by an understanding of the reason for implementing research, the discussion of the various roles within institutional effectiveness and student outcomes studies is of particular interest. Also included is a brief discussion on the pros/cons of standardized and local instruments. Institutional researchers can expect an expanded role in this assessment area and their efforts should be driven by internal concerns.

Rohrbaugh, J., and McCartt, A., eds. 1986. *Applying decision support systems in higher education.* New Directions for Institutional Research, no. 49. San Francisco: Jossey-Bass.

This volume introduces the application of Decision Support Systems (DSS) in institutional settings and is useful to institutional researchers for whom DSS may be a new concept. A variety of decision models have been selected to illustrate the range of practical functions that DSS can be designed to serve.

Schiltz, M.E. 1988. Professional standards for survey research. *Research in Higher Education*, 28 (1): 67-75.

This article addresses the issue of standards for the conduct of survey research. Executing surveys is one of the most common activities of the institutional researcher but one of the least served in the institutional research literature. The author presents survey research as "an orphan without a home in an academic discipline" and stresses that without a clear articulation of standards, survey research faces special technical problems not embraced in much of the general survey literature.

Tierney, W.G., ed. 1990. *Assessing academic climate and cultures*. New Directions for Institutional Research, no. 68. San Francisco: Jossey-Bass.

This volume discusses the theoretical constructs and applications of data about institutional cultures in management activities. The underlying rationale for studying climate and culture is to understand how "decisions and actions" are culturally influenced. This knowledge allows administrators to create more effective organizations, and helps guide the formulation/implementation of academic policies.

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TOTAL QUALITY MANAGEMENT

Editor: Ellen Earle Chaffee

Berry, T. H. 1991. *Managing the total quality transformation.* New York: McGraw Hill.

Based on experiences at Colonial Penn Insurance and Florida Power and Light (the latter being the only U.S. winner of Japan's Deming Prize), the author provides a step-by-step approach to transforming an organization through Total Quality Management. The book is practical and explicit.

Block, P. 1987. *The empowered manager: Positive political skills at work.* San Francisco: Jossey-Bass.

The author presents a highly readable set of ideas for the human relations side of quality improvement, especially appropriate for supervisors at any level of the organization.

Brassard, M. 1989. *The memory jogger plus+: Featuring the seven management and planning tools.* (GOAL/QPC, 13 Branch Street, Methuen, MA 01844, 508-685-3900).

This manual describes and explains how to use the "New 7" quality improvement tools--the tools that help improve management and planning. These tools help display the dimensions of an issue, usually non-quantitative, and make the issue more tractable. It is an excellent "how to" guide for planners and policy-makers and is also useful for quality improvement project teams.

Bossert, J. L. 1991. *Quality function deployment: A practitioner's approach.* Milwaukee, WI: ASQC Quality Press.

Quality Function Deployment (QFD) is a total quality process that provides structure to the cycle of developing new products or services with a primary focus on customer requirements. This book is a straightforward description of how to use QFD.

Camp, R. C. 1989. *Benchmarking: The search for industry best practices that lead to superior performance.* Milwaukee, WI: ASQC Press.

Benchmarking is comparing one's own key processes with, and learning from, those of other organizations where a similar process yields world-class results. It is a fundamental aspect of TQM, and this is the book that most practitioners recommend.

Chaffee, E. E., and Sherr, L. A. 1992. *Quality: Transforming postsecondary education.* ASHE-ERIC Higher Education Series, Washington, DC: George Washington University Press.

Sherr brought TQM to AIR in a 1989 general session address. The authors provide an introduction to TQM for people in postsecondary institutions, suitable for those who seek a readable overview with postsecondary applications and suggestions for follow-through.

Coate, L. E. 1990. TQM on campus: Implementing total quality management in a university setting. *NACUBO Business Officer.* November, 26-35.

This is one of the first detailed accounts of a university's initial efforts to apply TQM to various enterprises in the administrative area. It provides concrete illustrations of applications in the university setting, including results and reactions.

Cornesky, R. A. and colleagues. 1990. *W. Edwards Deming: Improving quality in colleges and universities.* Madison, WI: Magna Publications.

The author, a dean at Edinboro University of Pennsylvania, provides higher education-related commentary, examples, and cases for each of Deming's 14 points. The book is useful for stimulating ideas and notable in that it is among the first to relate TQM to higher education. See also the Spanbauer book.

Deming, W. E. 1986. *Out of the crisis.* Cambridge, MA: MIT Center for Advanced Engineering Study.

This is Deming's classic, which he continually improves. Read Walton or Gitlow and Gitlow first, because Deming does not write for the novice. But when you're ready for the master, read this book. You'll re-read it often.

DePree, M. 1989. *Leadership is an art.* New York: Doubleday.

The book offers reflections on leadership by the chairman of Herman Miller, Inc., a quality-oriented company for sixty years.

Garvin, D. A. 1988. *Managing quality: The strategic and competitive edge*. New York: Free Press.

A Harvard business school professor writes for managers, elaborating the history and nature of the quality concept and illustrating its impact with a comparative study from industry.

Gitlow, H. S., and Gitlow, S. J. 1987. *The Deming guide to quality and competitive position*. Englewood Cliffs, NJ: Prentice Hall.

The authors provide a good explanation of each of Deming's 14 points with discussion of how each point fits into the overall philosophy, questions for self-examination, and possible pitfalls when implementing. This is an excellent resource manual.

Gitlow, H. S., and Process Management International, Inc. 1990. *Planning for quality, productivity, and competitive position*. Homewood, IL: Dow Jones-Irwin.

A useful accompaniment to the Brassard book, this text places the seven new management tools of TQM in the context of the TQM concept, Deming's 14 points, and the seven traditional TQM tools. It explains how and when to use the seven new management tools.

GOAL/QPC. 1988. *The memory jogger: A pocket guide of tools for continuous improvement*. (GOAL/QPC, 13 Branch Street, Methuen, MA 01844, 508-685-3900).

This manual describes and explains how to use a wide array of traditional tools for quality improvement--the tools that help analyze processes and generate data to define problems and solutions. The tools include flow-charting, cause-and-effect diagrams, run charts, and control charts. The manual is an excellent "how to" guide, especially for quality improvement project teams.

Imai, M. 1986. *KAIZEN: The key to Japan's competitive success*. New York: Random House.

KAIZEN means commitment to constant improvement of quality. The author compares Eastern and Western management, gives brief introductions to a wide array of conceptual and practical tools. The book is a good map of the terrain and excellent resource manual which many postsecondary people find useful.

Ishikawa, K. (translated by David J. Lu). 1985. *What is total quality control?: The Japanese way*. Englewood Cliffs, NJ: Prentice Hall.

This is a basic and relatively comprehensive how-to book on Total Quality Control, which is characterized as "a thought revolution in management."

Ishikawa, K. *Guide to quality control*. Asian Productivity Organization. (Available from UNIPUB, One Water Street, White Plains, NY 10601, 800-247-8519).

This is the best seller in the area of basic statistical approaches for quality improvement. Originally written for factory foremen in Japan, it has much wider appeal.

Juran, J.M. 1988. *Juran on planning for quality*. New York: Free Press.

A contemporary of Deming and major figure in TQM, Juran explains his breakthrough system of quality improvement.

Juran, J.M. 1989. *Juran on leadership for quality: An executive handbook*. New York: Free Press.

This is a printed version of Juran's seminar for top executives. It emphasizes what top management must do to foster continuous improvement.

Scherkenbach, W. 1988. *The Deming route to quality and productivity: Road maps and road blocks*. Rockville, MD: Mercury Press/Fairchild Publications.

The author elaborates on each of Deming's 14 points with insights drawn from the author's experiences at Ford Motor Company.

Scholtes, P.R., et al. 1988. *The team handbook: How to improve quality with teams*. Madison, WI: Joiner. (Joiner Associates, Inc., P.O. Box 5445, Madison, WI 53705, 608-238-8134).

This book has many practical ideas to help teams work together to make improvements. It is a "must have" resource for quality improvement team development.

Seymour, D.T. 1992. *On Q. Causing quality in higher education.* New York: ACE/Macmillan.

Seymour began with an extensive set of visits to campuses in search of quality, and he ultimately found TQM. His visits provide rich, campus-based anecdotes about what quality is and can be in higher education.

Sherr, L.A., and Teeter, D.J., eds. 1991. *Total quality management in higher education.* New Directions for Institutional Research, no. 71. San Francisco: Jossey-Bass.

This volume provides a brief introduction to TQM, followed by chapters that describe its use in a community college and a university, discuss its relationship to assessment, deal with the barriers to TQM implementation in a university setting, and explain its relationship to leadership and institutional research. It is a good, practical view of TQM in higher education in the early stages.

Spanbauer, S.J. 1987. *Quality first in education . . . why not?* Appleton, WI: Fox Valley Technical College Foundation.

Fox Valley Technical College was among the first to teach TQM in its business continuing education program and has begun to use TQM, based on Philip Crosby's approach, in its own management. FVTC has adapted TQM for education in its Quality First program. The book explains Quality First with illustrations from FVTC's experience--a companion to the Cornesky book.

Townsend, P. L. 1990. *Commit to quality.* New York: Wiley and Sons.

The book relates the first five years of Total Quality at The Paul Revere Insurance Company. It is a good case history of service-industry implementation, full of applications ideas. Unfortunately, it tells of no statistical applications.

Walton, M. 1986. *The Deming management method.* New York: Putnam.

This is an excellent book to read first. It is divided into two basic parts. The first part summarizes a Deming seminar and his 14 points from the viewpoint of a professional newspaper writer. The second part consists of nine case studies on implementation.

Wheeler, D.J., and Chambers, D.S. 1986. *Understanding statistical process control*. Knoxville, TN: Statistical Process Controls. (Available from Statistical Process Control, 615-584-5005).

This is probably the best book on the practical aspects of control charts. The book was written for engineers with little or no statistical training.

Unless otherwise indicated, these and other books are available through:

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The ASQC sells books and other materials to the public. It is also a membership organization with regional and national meetings and a monthly magazine, *Quality Progress*. Among numerous other activities, the ASQC co-sponsors the Malcolm Baldrige National Quality Award.

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